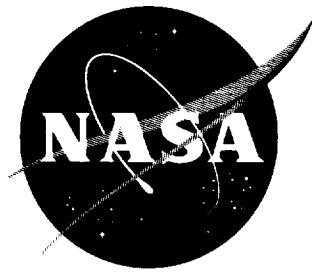
NASA TN D-397



TECHNICAL NOTE

D-397

DATA FROM A STATIC-THRUST INVESTIGATION OF A LARGE-SCALE GENERAL RESEARCH VTOL-STOL MODEL IN GROUND EFFECT

By Robert J. Huston and Matthew M. Winston

Langley Research Center
Langley Field, Va.

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DATA FROM A STATIC-THRUST INVESTIGATION OF A LARGE-SCALE GENERAL RESEARCH VTOL-STOL MODEL IN GROUND EFFECT

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SUMMARY

The model was tested at two different elevations with the wing pivot at 1.008 and 2.425 propeller diameters above the ground. The slipstream of the propellers was deflected by tilting the wing and propellers, by deflections of large-chord trailing-edge flaps, and by combinations of flap deflection and wing tilt. Tests were conducted over a range of propeller disk loadings from 7.41 to 29.70 pounds per square foot. Force data for the complete model and pressure distributions for the wing and flaps behind one propeller were recorded and are presented in tabular form without analysis.

INTRODUCTION

Extensive use of the helicopter has proven the utility of aircraft that are capable of operating without runways. The possible advantages of an airplane which combines both the vertical take-off capabilities of the helicopter and the high cruising speed of conventional airplanes are readily apparent. One possible means of achieving these advantages could be with a tilting wing and propeller or by a combination of flap deflection and wing tilt.

Extensive model investigations (for example, see refs. 1 to 5) have been made of various configurations designed for vertical take-off and landings (VTOL) or for short take-off and landing (STOL). (For a more complete bibliography, see ref. 6.) The model sizes used in the earlier work have prevented obtaining more detailed information on the distribution of aerodynamic loading over the wing and flaps. In addition, the extent to which the model scale might affect the thrust recovery and slipstream turning angles measured was not known. In an effort to provide information of this type, it was decided to test a large-scale general-research VTOL-STOL model.

The present investigation covers the static-thrust characteristics of the model as obtained from tests conducted outdoors at two different

elevations (wing pivot at 1.008 and 2.425 propeller diameters above the ground). The propeller slipstream was deflected by tilting the wing and propeller, by deflecting large-chord trailing-edge flaps, and by using combinations of flap deflection and wing tilt. Performance data were obtained over a range of propeller disk loadings. Pressure distributions were measured over a portion of the wing in order to define the distribution of load on the wing and flaps behind one of the propellers.

SYMBOLS

The positive sense of forces, moments, and angles are indicated in figure 1.

b	propeller blade chord, ft
D	propeller diameter, ft
h	propeller blade thickness, ft
R	propeller radius, ft
r	radius of any propeller blade section, ft
n	rotational speed, rpm
c	chord, ft
F	resultant force, lb
F_X	net longitudinal force (thrust minus drag), lb
L	lift, lb
M_Y	pitching moment, ft-lb
T	propeller thrust, total (longitudinal force with wing and flaps undeflected), lb
z	distance from ground to wing pivot, ft
Δp	differential pressure, $p - p_a$
p	local static pressure
p_a	atmospheric pressure

q_s slipstream dynamic pressure, $\frac{T}{6\pi R^2}$

α angle of attack, inclination of wing chord above horizontal plane, deg

δ_f flap deflection, deg

θ turning angle, inclination of resultant force vector from wing-chord plane

Subscripts:

55 55-percent-chord flap

30 30-percent-chord flap

APPARATUS AND TESTS

A sketch of the model used in these tests is shown in figure 2, and photographs of the model are shown in figures 3, 4, and 5. The airfoil coordinates are given in table I. The geometric characteristics of the model are as follows:

Propeller:	
Diameter, ft	5.0
Solidity (thrust basis)	0.1935
Airfoil section	NACA 64-0XX
Wing:	
Span, ft	35.0
Chord, ft	4.375
Area, sq ft	153.125
Airfoil section	NACA 63_2A215
Pivot, percent c	35
Flaps:	
Span, each wing, ft	15.458
Chord, projection of both, percent c	55
Chord, projection of rear, percent c	30

Vertical stabilizer:

Span, ft	6.0
Chord, ft	3.5
Area, sq ft	21.0
Airfoil section	NACA 0012

Horizontal stabilizer:

Span, ft	16.0
Chord, ft	3.0
Area, sq ft	48.0
Airfoil section	NACA 0012
Pivot, percent c	22.86

The model is powered by a single 1,000-horsepower, water-cooled, electric motor located in the fuselage. Power is transmitted to the propellers by means of extension shafts and gear boxes.

The four-bladed propellers have solid aluminum blades. Blade pitch is manually adjustable. Blade form curves are presented in figure 6. The direction of propeller rotation is indicated in figure 2. Rotational speed was measured with signals which were generated by steel vanes on the motor shaft rotating past a magnetic pickup. The output of this pickup was then read on an impulse counter.

The two slotted flaps, 55- and 30-percent wing chord, were mounted on external brackets, as shown in figures 3 and 4. The contours of the flaps are shown in figure 7. The flaps were adjusted manually and were locked in place by pins inserted in the brackets. Flap deflection was measured prior to each run.

The wing was pivoted at the 35-percent-chord station and could be rotated during the test to angles of attack between 0° and 90°. The all-movable horizontal stabilizer was mass-balanced about, and pivoted at, the 22.9-percent-chord station. It was either locked at zero incidence or allowed to float freely, as desired, for each test. Electrical position indicators measured the deflections of the wing and stabilizer.

Four total-pressure tubes (see fig. 8) were installed on the stabilizer chord line and were equally spaced across the right semispan. In order to obtain the average total pressure at the stabilizer, these tubes were manifolded to a single manometer tube. One static-pressure probe was installed at the center of the stabilizer semispan.

The wing and flap behind the center propeller of the right-hand wing panel were fitted with static-pressure orifices. The chordwise and spanwise location of these orifices are given in figure 9. The pressures were indicated on a fluid manometer and photographically recorded.

The surfaces of the wing and flaps had several spanwise joints between wood and metal. It was extremely difficult to maintain a smooth surface over these joints under outdoor conditions where temperature and humidity vary greatly. It is felt, however, that the condition of the surfaces was at least as good as those found on production aircraft. The flaps which were fitted with static-pressure orifices were wrapped in fiber glass in order to maintain an accurate contour.

The model was mounted on a balance composed of four load cells (figs. 10 and 11). The static weight of the model was supported by automotive-type coil springs in order that more sensitive load cells could be used to measure the aerodynamic loads. The load cells were calibrated in place and thus tares due to the supporting springs and the weight of the model were eliminated. Three vertically oriented load cells, two at the front model supports and one at the rear support, measured lift. A single horizontal load cell at the rear support measured longitudinal force. Pitching moment was calculated from the differences in the restraining forces at the four load cells.

In the low ground position ($z/D = 1.008$), the balance was attached directly to steel plates mounted on a concrete driveway. In the high position ($z/D = 2.425$), the balance and the steel plates were joined by a rigid pipe and channel structure 85.125 inches high, as shown in figures 4 and 5.

The tests were conducted outdoors in an unobstructed area at the Langley Research Center. The nearest structure was a power transformer, which was approximately 25 feet from the left wing tip. The next nearest structure was the Langley helicopter tower, which was approximately 130 feet behind the model. During the early phases of the program, a serious problem of blade pitting developed from recirculation of dirt and sand from the ground areas under the wings and it was necessary to pave a large area beneath the wings of the model.

Most of the data presented were obtained in random-direction winds of from 3 to 6 miles per hour. Approximately 10 percent of the data were obtained at wind speeds below 3 miles per hour.

The electrical power input to the motor was measured throughout the test. Inasmuch as those measurements included large undetermined tares in the power transmission system, the data are not presented.

There were no provisions for direct measurement of the thrust of the propellers. Therefore, all data were reduced by referring the measured forces to a value of propeller thrust defined by the longitudinal force that was measured when both wing and flaps were undeflected and the model was in the high position ($z/D = 2.425$). Therefore the values

of thrust used in data reduction do not reflect the possible effects of flap deflection, angle of attack, ground effect, and the random winds previously discussed. For reference purposes, the values of thrust used in the data reduction, in terms of propeller disk loadings, are given as a function of propeller rotational speed in the following table:

n	Propeller disk loading, lb/sq ft
1,510	7.41
2,085	14.56
2,680	24.81
2,915	29.70

A constant propeller blade pitch angle of 16.3° (at the three-quarter radius) was used throughout the test. The rotational speed of the propellers was held to within ±20 revolutions per minute of the desired speed.

The accuracy of the data is believed to be as follows:

Lift, lb	±50
Longitudinal force, lb	±50
All angles, deg	±0.2

The pitching moment is known to contain large errors due to the large moment arms between restraining load cells; consequently, the pitching-moment data given herein should be considered only as a qualitative indication of magnitude.

Inasmuch as the dynamic pressure measured at the floating stabilizer was of the order of 5 percent of the propeller slipstream dynamic pressure, except for the case where the wing and flaps were undeflected, these data are not presented herein.

PRESENTATION OF DATA

The data are presented in tabular form without analysis. The force data obtained at $z/D = 2.425$ are given in table II. The force data obtained at $z/D = 1.008$ are given in table III. The pressure coefficients measured on the wing and flaps at $z/D = 2.425$ are given in tables IV to XXII. The pressure coefficients measured on the wing and flaps at $z/D = 1.008$ are given in tables XXIII to XLIII.

A motion-picture film supplement to this paper has been prepared and is available on loan. A request card form and a description of the film will be found at the back of this paper, on the page immediately preceding the abstract and index pages.

Langley Research Center,
National Aeronautics and Space Administration,
Langley Field, Va., March 17, 1960.

REFERENCES

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3. Draper, John W., and Kuhn, Richard E.: Some Effects of Propeller Operation and Location on Ability of a Wing With Plain Flaps To Deflect Propeller Slipstreams Downward for Vertical Take-off. NACA TN 3360, 1955.

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6. Kuhn, Richard E.: Semiempirical Procedure for Estimating Lift and Drag Characteristics of Propeller-Wing-Flap Configurations for Vertical- and Short-Take-Off-and-Landing Airplanes. NASA MEMO 1-16-59L, 1959.

TABLE I.- NACA 63_2A215 AIRFOIL COORDINATES

[Stations and ordinates given in percent of airfoil chord]

Upper surface		Lower surface	
Station	Ordinate	Station	Ordinate
0	0	0	0
.386	1.254	.614	-1.142
.623	1.521	.877	-1.363
1.105	1.959	1.395	-1.717
2.328	2.784	2.672	-2.362
4.804	3.974	5.196	-3.252
7.295	4.863	7.705	-3.891
9.794	5.589	10.206	-4.397
14.804	6.720	15.196	-5.158
19.822	7.547	20.178	-5.687
24.846	8.140	25.154	-6.038
29.873	8.531	30.127	-6.235
34.903	8.719	35.097	-6.271
39.933	8.714	40.067	-6.156
44.963	8.529	45.037	-5.901
49.992	8.188	50.008	-5.528
55.018	7.713	54.982	-5.061
60.041	7.122	59.959	-4.518
65.061	6.428	64.939	-3.918
70.077	5.650	69.923	-3.284
75.090	4.810	74.910	-2.650
80.108	3.924	79.892	-2.054
85.105	2.971	84.895	-1.529
90.074	2.000	89.926	-1.020
95.038	1.016	94.962	-.526
100.00	0	100.00	0

Leading-edge radius: 1.630
Slope of radius through leading edge: 0.095

TABLE II.- FORCE MEASUREMENTS AT $z/D = 2.425$

$\delta_{f,55}$	$\delta_{f,30}$	n	α	$\frac{L}{T}$	$\frac{F_X}{T}$	$\frac{F}{T}$	$\theta + \alpha$	Stabilizer locked $\frac{M_Y}{TD}$
0	0	1,510	0	0.108	1.004	1.010	6.1	0.026
0	0	2,085	0	.048	.997	.997	2.8	-.073
0	0	2,915	0	.003	1.003	.986	.2	-.068
0	0	1,510	15.0	.297	.956	1.000	17.3	.011
0	0	2,085	15.0	.295	.966	1.009	17.0	.027
0	0	2,915	15.0	.238	.975	1.005	13.7	.012
0	0	1,510	30.0	.616	.850	1.049	36.0	-.186
0	0	2,085	30.0	.600	.875	1.062	34.4	.004
0	0	2,915	30.0	.565	.862	1.031	33.2	-.053
0	0	1,510	45.0	.879	.663	1.101	53.0	.039
0	0	2,085	45.0	.756	.664	1.006	48.7	-.038
0	0	1,510	60.0	.952	.437	1.048	65.3	-.025
0	0	2,085	60.0	.900	.420	.993	65.0	-.092
0	0	2,915	60.0	.897	.487	1.021	61.5	-.040
0	0	1,510	75.0	1.103	.185	1.118	80.5	-.261
0	0	2,085	75.0	1.030	.203	1.049	78.9	-.094
0	0	2,915	75.0	.969	.221	.993	77.2	.025
0	0	1,510	90.0	1.042	-.147	1.052	98.0	-.014
0	0	2,085	90.0	.981	-.089	.985	95.2	.001
0	0	2,915	90.0	.978	-.056	.980	93.3	.040
0	28.5	2,915	0	.254	.958	.991	14.9	-.070
0	28.5	1,510	75	.991	0	.991	90.0	.023
0	28.5	2,085	75	.989	0	.989	90.0	-.059
0	28.5	2,915	75	.920	0	.920	90.0	-.090
0	38.6	2,915	0	.355	.917	.983	21.2	-.134
0	38.6	1,510	68.0	1.036	-.024	1.036	91.3	-.092
0	38.6	2,085	68.0	.998	0	.998	90.0	-.058
0	38.6	2,915	68.0	.948	.015	.948	89.1	-.149
0	49.5	2,915	0	.399	.872	.959	24.6	-.146
0	49.5	1,510	64.5	.907	0	.907	90.0	-.160
0	49.5	2,085	64.5	.951	0	.951	90.0	-.146
0	49.5	2,915	64.5	.930	.015	.931	89.1	-.177
19.8	28.5	2,915	0	.455	.867	.979	27.7	-.218
19.8	28.5	1,510	62.0	.957	-.070	.960	94.2	-.096
19.8	28.5	2,085	62.0	.972	-.060	.974	93.5	-.125
19.8	28.5	2,915	62.0	.940	-.029	.941	91.8	-.136

TABLE III.- FORCE MEASUREMENTS AT z/D = 1.003 - Continued

$\delta_{f,55}$	$\delta_{f,30}$	n	α	$\frac{L}{T}$	$\frac{F_X}{T}$	$\frac{F}{T}$	θ + α	Stabilizer locked $\frac{M_Y}{TD}$	Stabilizer free $\frac{M_Y}{TD}$
0	38.6	1,510	0	0.230	0.941	0.969	13.8	-0.148	
0	38.6	2,085	0	.223	.951	.977	13.2	-.163	
0	38.6	2,915	0	.247	.927	.960	14.9	-.155	
0	38.6	1,510	0	.293	.938	.983	17.3		-0.239
0	38.6	2,085	0	.263	.936	.973	15.7		-.246
0	38.6	2,915	0	.253	.926	.960	15.3		-.241
0	38.6	1,510	74.0	1.113	.024	1.113	88.8	-.035	
0	38.6	2,085	74.0	1.145	0	1.145	90.0	-.076	
0	38.6	2,915	74.0	1.138	0	1.138	90.0	-.083	
0	38.6	1,510	74.0	1.179	0	1.179	90.0		-.099
0	38.6	2,085	74.0	1.176	0	1.176	90.0		-.058
0	38.6	2,915	74.0	1.130	0	1.130	90.0		-.109
0	49.5	1,510	0	.334	.931	.989	19.7	-.158	
0	49.5	2,085	0	.300	.935	.983	17.8	-.215	
0	49.5	2,915	0	.310	.913	.963	18.8	-.187	
0	49.5	1,510	0	.378	.935	1.008	22.0		-.242
0	49.5	2,085	0	.359	.856	.928	22.7		-.296
0	49.5	2,915	0	.309	.891	.943	19.1		-.262
0	49.5	1,510	74.0	1.106	0	1.106	90.0	-.208	
0	49.5	2,085	74.0	1.050	0	1.050	90.0	-.105	
0	49.5	2,915	74.0	1.094	.006	1.094	89.7	-.097	
0	49.5	1,510	74.0	1.088	0	1.088	90.0		-.102
0	49.5	2,085	74.0	1.109	0	1.109	90.0		-.094
0	49.5	2,915	74.0	1.104	0	1.104	90.0		-.120
19.8	28.5	1,510	0	.500	.849	.985	30.5	-.174	
19.8	28.5	2,085	0	.455	.836	.952	28.6	-.185	
19.8	28.5	2,915	0	.426	.847	.949	26.7	-.195	
19.8	28.5	1,510	0	.469	.845	.967	29.1		-.294
19.8	28.5	2,085	0	.468	.855	.975	28.7		-.255
19.8	28.5	2,915	0	.448	.847	.958	27.9		-.252
19.8	28.5	1,510	69.0	1.082	0	1.082	90.0	-.105	
19.8	28.5	2,085	69.0	1.097	0	1.097	90.0	-.122	
19.8	28.5	2,915	69.0	1.114	0	1.114	90.0	-.129	
19.8	28.5	1,510	69.0	1.086	0	1.086	90.0		-.120
19.8	28.5	2,085	69.0	1.097	0	1.097	90.0		-.141
19.8	28.5	2,915	69.0	1.089	0	1.089	90.0		-.145
19.8	38.6	1,510	0	.531	.833	.988	32.5	-.249	
19.8	38.6	2,085	0	.518	.827	.975	32.1	-.222	
19.8	38.6	2,915	0	.482	.808	.941	30.8	-.245	
19.8	38.6	1,510	0	.544	.827	.989	33.3		-.258
19.8	38.6	2,085	0	.500	.828	.967	31.1		-.259
19.8	38.6	2,915	0	.496	.817	.956	31.3		-.257
19.8	38.6	1,510	64.5	1.082	0	1.082	90.0	-.131	
19.8	38.6	2,085	64.5	1.093	0	1.093	90.0	-.115	
19.8	38.6	2,915	64.5	1.102	0	1.102	90.0	-.148	
19.8	38.6	1,510	64.5	1.119	0	1.119	90.0		-.146
19.8	38.6	2,085	64.5	1.094	0	1.094	90.0		-.186
19.8	38.6	2,915	64.5	1.092	0	1.092	90.0		-.167
19.8	49.5	1,510	0	.531	.826	.981	32.7	-.251	
19.8	49.5	2,085	0	.510	.809	.957	32.2	-.219	
19.8	49.5	2,915	0	.494	.783	.925	32.3	-.244	
19.8	49.5	1,510	0	.580	.818	1.004	35.3		-.278
19.8	49.5	2,085	0	.539	.807	.970	33.7		-.304
19.8	49.5	2,915	0	.518	.786	.941	33.4		-.299

TABLE III.- FORCE MEASUREMENTS AT z/D = 1.008 - Continued

$\delta_{f,55}$	$\delta_{f,30}$	n	α	$\frac{L}{T}$	$\frac{F_X}{T}$	$\frac{F}{T}$	$\theta + \alpha$	Stabilizer locked $\frac{M_Y}{TD}$	Stabilizer free $\frac{M_Y}{TD}$
19.8	49.5	1,510	62.5	1.073	0	1.073	90.0	-0.138	
19.8	49.5	2,085	62.5	1.115	0	1.115	90.0	-.123	
19.8	49.5	2,915	62.5	1.093	0	1.093	90.0	-.161	
19.8	49.5	1,510	62.5	1.059	0	1.059	90.0		-0.173
19.8	49.5	2,085	62.5	1.051	0	1.051	90.0		-.198
19.8	49.5	2,915	62.5	1.085	0	1.085	90.0		-.187
39.3	28.5	1,510	0	.578	.725	.927	38.6	-.238	
39.3	28.5	2,085	0	.579	.712	.918	39.1	-.238	
39.3	28.5	2,915	0	.545	.697	.885	38.0	-.253	
39.3	28.5	1,510	0	.593	.698	.916	40.3		-.288
39.3	28.5	2,085	0	.573	.711	.913	38.9		-.291
39.3	28.5	2,915	0	.591	.715	.928	39.6		-.281
39.3	28.5	1,510	64.4	1.023	0	1.023	90.0	-.100	
39.3	28.5	2,085	64.4	1.054	-.012	1.054	90.6	-.107	
39.3	28.5	2,915	64.4	1.025	0	1.025	90.0	-.108	
39.3	28.5	1,510	64.4	1.038	0	1.038	90.0		-.150
39.3	28.5	2,085	64.4	1.048	-.012	1.048	90.6		-.145
39.3	28.5	2,915	64.4	1.035	0	1.035	90.0		-.130
39.3	38.6	1,510	0	.605	.684	.913	41.5	-.257	
39.3	38.6	2,085	0	.579	.671	.886	40.8	-.237	
39.3	38.6	2,915	0	.555	.671	.871	39.6	-.176	
39.3	38.6	1,510	0	.650	.633	.908	45.8		-.326
39.3	38.6	2,085	0	.617	.651	.892	43.8		-.309
39.3	38.6	2,915	0	.590	.656	.883	41.9		-.336
39.3	38.6	1,510	61.2	1.003	0	1.003	90.0	-.083	
39.3	38.6	2,085	61.2	.997	0	.997	90.0	-.139	
39.3	38.6	2,915	61.2	1.000	0	1.000	90.0	-.131	
39.3	38.6	1,510	61.2	1.034	0	1.034	90.0		-.129
39.3	38.6	2,085	61.2	1.018	0	1.018	90.0		-.135
39.3	38.6	2,915	61.2	.998	0	.998	90.0		-.162
39.3	49.5	1,510	0	.620	.646	.895	43.8	-.256	
39.3	49.5	2,085	0	.592	.641	.872	42.7	-.260	
39.3	49.5	2,915	0	.563	.632	.847	41.7	-.293	
39.3	49.5	1,510	0	.635	.649	.908	44.4		-.288
39.3	49.5	2,085	0	.601	.635	.874	43.4		-.309
39.3	49.5	2,915	0	.599	.682	.908	41.3		-.277
39.3	49.5	1,510	59.0	1.018	0	1.018	90.0	-.089	
39.3	49.5	2,085	59.0	.990	0	.990	90.0	-.143	
39.3	49.5	2,915	59.0	.987	0	.987	90.0	-.161	
39.3	49.5	1,510	59.0	1.022	0	1.022	90.0		-.148
39.3	49.5	2,085	59.0	.989	0	.989	90.0		-.172
39.3	49.5	2,915	59.0	.960	0	.960	90.0		-.186
59.4	28.5	1,510	0	.532	.609	.809	41.1	-.226	
59.4	28.5	2,085	0	.515	.611	.799	40.1	-.246	
59.4	28.5	2,915	0	.537	.601	.806	41.8	-.241	
59.4	28.5	1,510	0	.525	.608	.803	40.8		-.267
59.4	28.5	2,085	0	.574	.600	.830	43.7		-.237
59.4	28.5	2,915	0	.539	.590	.799	42.4		-.313
59.4	28.5	1,510	59.0	.968	0	.968	90.0	-.089	
59.4	28.5	2,085	59.0	.973	0	.973	90.0	-.099	
59.4	28.5	2,915	59.0	.940	0	.940	90.0	-.126	
59.4	28.5	1,510	59.0	.969	-.023	.969	91.4		-.162
59.4	28.5	2,085	59.0	.968	-.024	.968	91.4		-.169
59.4	28.5	2,915	59.0	.964	0	.964	90.0		-.141

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TABLE III.- FORCE MEASUREMENTS AT z/D = 1.008 - Concluded

$\delta_{f,55}$	$\delta_{f,30}$	n	α	$\frac{L}{T}$	$\frac{F_X}{T}$	$\frac{F}{T}$	$\theta + \alpha$	Stabilizer locked $\frac{M_Y}{TD}$	Stabilizer free $\frac{M_Y}{TD}$
59.4	38.6	1,510	0	0.562	0.569	0.800	44.7	-0.248	
59.4	38.6	2,085	0	.563	.574	.804	44.5	-.248	
59.4	38.6	2,915	0	.562	.595	.819	43.4	-.269	
59.4	38.6	1,510	0	.587	.608	.844	44.0		-0.229
59.4	38.6	2,085	0	.572	.591	.823	44.0		-.263
59.4	38.6	2,915	0	.588	.588	.830	45.1		-.245
59.4	38.6	1,510	58.2	.941	0	.941	90.0	-.327	
59.4	38.6	2,085	58.2	.949	0	.949	90.0	-.107	
59.4	38.6	2,915	58.2	.921	0	.921	90.0	-.134	
59.4	38.6	1,510	58.2	.955	-.013	.956	91.4		-.085
59.4	38.6	2,085	58.2	.953	-.012	.953	90.7		-.077
59.4	38.6	2,915	58.2	.947	-.012	.947	90.7		-.143
59.4	49.5	1,510	0	.599	.574	.830	46.2	-.206	
59.4	49.5	2,085	0	.557	.556	.787	45.1	-.278	
59.4	49.5	2,915	0	.556	.558	.787	44.9	-.254	
59.4	49.5	1,510	0	.579	.568	.811	45.6		-.300
59.4	49.5	2,085	0	.569	.583	.815	44.3		-.284
59.4	49.5	2,915	0	.563	.564	.797	45.0		-.290
59.4	49.5	1,510	57.8	.886	.012	.886	89.3	-.117	
59.4	49.5	2,085	57.8	.921	.006	.921	89.6	-.107	
59.4	49.5	2,915	57.8	.904	.003	.904	89.8	-.127	
59.4	49.5	1,510	57.8	.919	0	.919	90.0		-.093
59.4	49.5	2,085	57.8	.890	-.023	.890	91.5		-.149
59.4	49.5	2,915	57.8	.897	0	.897	90.0		-.157
69.3	28.5	1,510	0	.520	.580	.781	41.7	-.224	
69.3	28.5	2,085	0	.530	.588	.792	42.0	-.230	
69.3	28.5	2,915	0	.481	.593	.763	39.1	-.232	
69.3	28.5	1,510	0	.550	.590	.807	43.0		-.273
69.3	28.5	2,085	0	.564	.603	.827	43.0		-.280
69.3	28.5	2,915	0	.537	.589	.797	42.4		-.282
69.3	28.5	1,510	58.8	.901	0	.901	90.0	-.113	
69.3	28.5	2,085	58.8	.904	0	.904	90.0	-.118	
69.3	28.5	2,915	58.8	.911	0	.911	90.0	-.100	
69.3	28.5	1,510	58.8	.930	0	.930	90.0		-.132
69.3	28.5	2,085	58.8	.929	0	.929	90.0		-.102
69.3	28.5	2,915	58.8	.930	0	.930	90.0		-.119
69.3	38.6	1,510	0	.496	.548	.739	42.2	-.203	
69.3	38.6	2,085	0	.520	.573	.773	42.2	-.222	
69.3	38.6	2,915	0	.500	.558	.750	41.9	-.215	
69.3	38.6	1,510	0	.493	.556	.743	41.6		-.316
69.3	38.6	2,085	0	.517	.571	.771	42.1		-.281
69.3	38.6	2,915	0	.520	.575	.776	42.1		-.256
69.3	38.6	1,510	58.2	.889	-.023	.889	91.5	-.086	
69.3	38.6	2,085	58.2	.902	0	.902	90.0	-.059	
69.3	38.6	2,915	58.2	.887	0	.887	90.0	-.088	
69.3	38.6	1,510	58.2	.872	-.023	.872	91.5		-.165
69.3	38.6	2,085	58.2	.908	-.012	.908	90.8		-.119
69.3	38.6	2,915	58.2	.901	0	.901	90.0		-.119

TABLE IV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 2.425

Tube number	n = 2915 α = 0.0					n = 2915 α =					n = α =					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	-.244			.777	.571											1
2	.239	.369		-.107	-.439											2
3	.300	-.066		-.235	-.278											3
4	.174	-.154		-.167	-.154											4
5	.056	-.114		-.093	-.081											5
6	-.348	-1.039		.126	.388											6
7	-.246	-.246		-.042	.077											7
8	-.218	-.302		-.225	-.059											8
9	-.035	-.043	.072	.003	.100											9
10	-.056	-.107	-.139	-.093	-.017											10
11	-.056	-.147	-.179	-.095	-.035											11
12	-.029	-.077	-.042	.010	.093											12
13	-.056	-.147	-.174	-.095	-.033											13
14	-.052	-.169	-.174	-.131	-.110											14
15	.049	-.056	-.061	-.036	-.031											15
16	.036	-.045	-.045	-.042	-.040											16
17	-.207	-.140	-.128	-.151	-.137											17
18	-.102	-.088	-.112	-.077	-.045											18
19	-.043	-.033	-.049	-.035	-.005											19
20	.066	.116	.082	.158	.135											20
21	.014	-.038	-.068	-.051	.001											21
22	.072	.112	.081	.160	.160											22
23	.017	-.068	-.065	.082	.066											23
24	.052	.001	.012	.031	.000											24
25	.059	.017	.010	.010	.005											25
26	.086	.061	.051	.051	.059											26
27	.036	.022	.001	.031	.054											27
28		.056	.045	.077	.086											28

TABLE V

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 2.425

Tube number	n = 2915 α =					n = 2915 α 15.0					n = 2680 α = 15.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1						.184			.511	.356	.009			.545	.371	1
2						.111	.316		-.297	-.172	.102	.307		-.291	-.286	2
3																3
4									-.172	-.115				-.170	-.087	4
5						-.054	-.127		-.131	-.118	-.041	-.125		-.128	-.108	5
6						-.541	-.004		.345	.525	-.577	-.795		.339	.521	6
7						-.302	-.356		.054	.159	-.318	-.356		.053	.149	7
8						-.268	-.254		-.206	-.011	-.276	-.246		-.195	-.024	8
9						.020	-.036	.118	.047	.213	.022	-.022	.111	.053	.206	9
10						-.075	-.125	-.154	-.056	-.059	-.072	-.125	-.149	-.056	-.060	10
11						-.088	-.175	-.211	-.118	-.068	-.083	-.161	-.210	-.113	-.070	11
12						.011	-.104	-.029	.059	.159	.018	-.087	-.035	.064	.151	12
13						-.077	-.181	-.209	-.109	-.063	-.096	-.178	-.208	-.106	-.064	13
14						-.122	-.193	-.202	-.181	-.156	-.115	-.191	-.193	-.180	-.153	14
15						-.015	-.059	-.068	-.068	-.052	-.017	-.058	-.068	-.064	-.045	15
16						-.011	-.043	-.052	-.040	-.031	-.005	-.043	-.051	-.034	-.028	16
17						-.304	-.177	-.161	-.161	-.188	-.314	-.166	-.149	-.163	-.191	17
18						-.131	-.143	-.093	-.070	-.027	-.134	-.123	-.094	-.064	-.028	18
19						-.056	-.077	-.063	-.011	.002	-.062	-.072	-.070	-.005	-.003	19
20						.070	.054	.127	.175	.115	.070	.056	.130	.164	.113	20
21						-.025	-.038	-.070	-.049	-.004	-.024	-.034	-.068	-.047	-.001	21
22						.075	.056	.125	.184	.175	.075	.062	.132	.180	.172	22
23						-.018	-.072	-.072	-.054	.004	-.013	-.072	-.075	-.049	.007	23
24						.002	-.006	.009	-.006	-.020	.005	.007	.011	-.005	-.015	24
25						.029	.018	.018	.009	.002	.028	.018	.018	.005	.009	25
26						.079	.066	.072	.063	.059	.075	.072	.060	.060	.062	26
27						.043	.045	.034	.049	.052	.041	.047	.037	.051	.047	27
28							-.002	.056	.097	.079		-.011	.064	.096	.079	28

TABLE VI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ 00.0 $\delta_{f,30}$ = 00.0 z/D = 2.425

Tube number	n = 2915 α =					n = 2915 α 30.0					n = 2680 α = 30.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1						.507			.409	.254	.247			.342	.305	1
2						.113	.291		-.184	-.141	.110	.272		-.226	-.094	2
3																3
4									-.239	.223				-.245	-.154	4
5						-.081	-.143		-.150	-.134	-.056	-.145		-.150	-.129	5
6						-.462	-.696		.557	.559	-.477	-.683		.566	.524	6
7						-.263	-.318		.075	.204	-.274	-.321		.075	.160	7
8						-.245	-.254		-.191	.009	-.257	-.263		-.185	-.003	8
9						.011	-.040	.179	.029	.245	.085	-.050	.164	.040	.170	9
10						-.084	-.143	-.166	-.063	-.059	-.118	-.145	-.170	-.065	-.069	10
11						-.100	-.202	-.229	-.136	-.072	-.139	-.203	-.232	-.137	-.079	11
12						.004	-.102	-.004	.040	.191	.023	-.116	-.019	.050	.114	12
13						-.086	-.200	-.216	-.122	-.068	-.183	-.203	-.224	-.125	-.075	13
14						-.143	-.213	-.197	-.204	-.186	-.141	-.210	-.203	-.205	-.158	14
15						-.022	-.072	-.075	-.075	-.066	-.056	-.071	-.079	-.083	-.069	15
16						-.022	-.050	-.047	-.045	-.040	-.017	-.050	-.048	-.054	-.052	16
17						-.289	-.159	-.152	-.143	-.154	-.268	-.183	-.180	-.139	-.147	17
18						-.120	-.136	-.066	-.056	.000	-.121	-.147	-.065	-.061	-.025	18
19						-.052	-.063	-.045	.004	.025	-.052	-.069	-.065	-.001	.005	19
20						.079	.081	.143	.195	.134	.087	.071	.139	.189	.077	20
21						-.029	-.045	-.070	-.068	-.009	-.036	-.050	-.075	-.065	-.027	21
22						.084	.081	.141	.193	.186	.090	.071	.139	.191	.129	22
23						-.020	-.077	-.072	-.066	.004	-.021	-.073	-.079	-.069	-.021	23
24						-.011	-.009	.013	-.004	-.025	-.001	-.009	.003	-.015	-.038	24
25						.031	.018	.022	.013	.004	.030	.017	.017	.005	-.003	25
26						.084	.072	.070	.070	.063	.083	.069	.063	.061	.040	26
27						.047	.081	.047	.052	.063	.050	.077	.048	.052	.052	27
28							.034	.070	.100	.095		.029	.071	.096	.071	28

TABLE VII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ 00.0 $\delta_{f,30}$ = 00.0 z/D = 2.425

Tube number	n = 2915 α =					n = 2915 α 60.0					n = 2680 α = 60.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1						.184			.589	.566	.055			.776	.537	1
2						.213	.317		-.179	-.478	.151	.374		-.120	-.485	2
3						.245	-.103		-.272	-.319	.214	-.059		-.250	-.309	3
4						.114	-.193		-.222	-.193	.118	-.147		-.185	-.181	4
5						.006	-.155		-.146	-.114	.021	-.122		-.112	-.107	5
6						-.274	-.757		.227	.422	-.334	-1.005		.137	.445	6
7						-.222	-.366		.008	.101	-.242	-.457		-.032	.103	7
8						-.222	-.303		-.200	-.038	-.229	-.319		-.216	-.042	8
9						.011	-.006	.141	.035	.159	.011	-.013	.108	.036	.151	9
10						-.074	-.114	-.159	-.085	-.056	-.068	-.093	-.143	-.055	-.044	10
11						-.076	-.195	-.220	-.139	-.065	-.070	-.147	-.196	-.101	-.055	11
12						.011	-.054	-.006	.024	.123	.019	-.042	-.017	.042	.116	12
13						-.004	-.186	-.211	-.130	-.060	-.177	-.164	-.193	-.091	-.053	13
14						-.085	-.227	-.215	-.191	-.152	-.080	-.187	-.191	-.156	-.139	14
15						-.002	-.083	-.076	-.062	-.051	-.059	-.065	-.063	-.044	-.044	15
16						.008	-.062	-.054	-.042	-.033	.022	-.040	-.047	-.030	-.030	16
17						-.242	-.125	-.119	-.152	-.173	-.250	-.131	-.112	-.162	-.168	17
18						-.096	-.074	-.060	-.074	-.035	-.105	-.072	-.061	-.078	-.030	18
19						-.042	-.035	-.022	-.024	.000	-.040	-.030	-.019	-.022	.003	19
20						.085	.094	.110	.164	.128	.084	.118	.082	.154	.131	20
21						-.004	-.047	-.078	-.065	-.006	.005	-.011	-.074	-.042	.001	21
22						.092	.096	.114	.168	.173	.091	.114	.080	.166	.175	22
23						.000	-.080	-.074	-.065	.006	.009	-.068	-.072	-.045	.011	23
24						.029	.011	-.013	.011	-.006	.042	.049	.000	.019	-.003	24
25						.038	.015	.024	.015	.011	.055	.021	.024	.011	.015	25
26						.080	.060	.065	.074	.072	.095	.066	.059	.053	.072	26
27						.042	.125	.015	.029	.054	.047	.116	.009	.051	.063	27
28							.065	.051	.087	.092		.042	.049	.082	.099	28

TABLE VIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_0}$ OBSERVED ON WING

$\delta_{f,55} = 00.0$ $\delta_{f,30} = 00.0$ $z/D = 2.425$

Tube number	n = 2915 α =					n = 2915 α = 75.0					n = 2680 α = 75.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1						-.061			.734	.611	.112			.583	.507	1
2						.311	.363		-.152	-.450	.326	.315		-.213	-.517	2
3						.316	-.059		-.252	-.297	.301	-.110		-.293	-.340	3
4						.159	-.184		-.197	-.175	.124	-.202		-.243	-.208	4
5						.034	-.136		-.118	-.095	.015	-.153		-.163	-.120	5
6						-.277	-.952		.188	.409	-.229	-.815		.213	.463	6
7						-.238	-.448		-.002	.086	-.204	-.412		.019	.124	7
8						-.232	-.320		-.197	-.059	-.216	-.328		-.165	-.025	8
9						-.036	-.020	.138	.036	.120	-.009	-.009	.147	.046	.142	9
10						-.052	-.097	-.156	-.038	-.036	-.060	-.098	-.169	-.050	-.038	10
11						-.056	-.168	-.225	-.106	-.052	-.066	-.182	-.231	-.136	-.060	11
12						-.029	-.047	-.002	.052	.106	.000	-.040	-.001	.064	.118	12
13						.002	-.168	-.220	-.093	-.050	-.200	-.178	-.221	-.124	-.054	13
14						-.066	-.204	-.227	-.163	-.129	-.083	-.219	-.225	-.206	-.155	14
15						.000	-.070	-.088	-.050	-.040	-.068	-.081	-.087	-.077	-.056	15
16						.022	-.050	-.063	-.031	-.031	.017	-.054	-.060	-.035	-.036	16
17						-.216	-.118	-.125	-.141	-.156	-.231	-.116	-.112	-.138	-.143	17
18						-.109	-.066	-.066	-.061	-.036	-.107	-.062	-.058	-.066	-.015	18
19						-.050	-.031	-.020	-.011	.002	-.046	-.027	-.023	-.021	.017	19
20						.052	.102	.111	.170	.125	.079	.091	.099	.167	.132	20
21						.000	-.025	-.084	-.045	-.004	-.001	-.035	-.077	-.054	-.005	21
22						.056	.100	.111	.170	.166	.081	.091	.093	.173	.173	22
23						.002	-.070	-.084	-.050	.002	.011	-.073	-.077	-.054	.001	23
24						.050	.047	-.006	.020	-.006	.035	.027	-.009	.003	-.013	24
25						.050	.025	.027	.015	.009	.050	.027	.025	.011	.013	25
26						.079	.068	.068	.068	.059	.091	.079	.066	.083	.073	26
27						.025	.122	.013	.075	.052	.036	.114	.019	.077	.070	27
28							.072	.045	.093	.043		.083	.060	.077	.107	28

TABLE IX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 2.425

Tube number	n = 2915 α =					n = 2915 α = 90.0					n = 2680 α = 90.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1						.191			.506	.442	.147			.439	.470	1
2						.360	.289		-.241	-.542	.350	.301		-.297	-.538	2
3						.291	-.125		-.303	-.364	.293	-.113		-.322	-.356	3
4						.100	-.207		-.255	-.230	.110	-.204		-.248	-.229	4
5						-.002	-.159		-.173	-.139	.001	-.161		-.157	-.132	5
6						-.173	-.752		.228	.472	-.208	-.748		.297	.460	6
7						-.177	-.387		.029	.134	-.195	-.362		.058	.127	7
8						-.207	-.312		-.148	-.018	-.212	-.284		-.149	-.018	8
9						.013	.002	-.066	.070	.143	.005	.000	.149	.056	.146	9
10						-.070	-.088	.187	-.050	-.045	-.068	-.098	-.157	-.051	-.041	10
11						-.079	-.173	-.157	-.139	-.066	-.079	-.180	-.229	-.130	-.064	11
12						.020	-.032	-.232	.082	.120	.011	-.034	.007	.060	.121	12
13						.022	-.173	.032	-.132	-.061	-.176	-.180	-.223	-.117	-.066	13
14						-.098	-.225	-.221	-.219	-.166	-.094	-.223	-.231	-.202	-.168	14
15						.029	-.084	-.234	-.091	-.061	-.066	-.085	-.094	-.073	-.060	15
16						.004	-.054	-.093	-.045	-.041	.005	-.056	-.062	-.047	-.041	16
17						.230	.185	-.066	.129	.129	-.229	-.094	.096	-.119	-.130	17
18						-.093		-.086	-.056	-.013	-.096	-.051	-.049	-.041	-.015	18
19						-.043	-.022	-.032	-.011	.029	-.045	-.017	-.013	.001	.024	19
20						.086	.091	-.002	.171	.129	.085	.104	.094	.182	.125	20
21						-.013	-.036	.102	-.054	-.011	-.015	-.037	-.075	-.053	-.011	21
22						.102	.088	-.075	.177	.177	.093	.102	.094	.182	.170	22
23						-.009	-.084	.107	-.056	-.002	-.007	-.077	-.072	-.056	-.001	23
24						.020	.022	-.068	-.009	-.020	.018	.013	-.001	.001	-.022	24
25						.038	.025	-.004	.013	.006	.041	.022	.028	.009	.007	25
26						.084	.079	.038	.082	.079	.083	.075	.068	.085	.070	26
27						.043	.109	.073	.079	.075	.039	.130	.022	.085	.073	27
28							.079	.022	.079	.066		.081	.058	.096	.036	28

TABLE X

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 28.5 z/D = 2.425

Tube number	n = 2915 α = 0.0					n = 2915 α = 75.0					n = α =					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	-.114			.610	.467	.062			.467	.392						1
2	.100	.343		-.267	-.294	.104	.285		-.333	-.090						2
3	.098	-.059				.068	-.073									3
4				-.211	-.281				-.212	-.020						4
5	-.005	-.134		-.134	-.119	-.034	-.151		-.159	-.134						5
6	-.444	-.874		.286	.494	-.465	-.691		.395	.530						6
7	-.235	-.343		.066	.152	-.236	-.261		.107	.179						7
8	-.159	-.153		-.114	.026	-.164	-.124		-.102	.043						8
9	.153	.091	.125	.136	.256	.136	.079	.183	.159	.301						9
10	-.030	-.085	-.119	-.059	.009	-.054	-.092	-.145	-.054	-.020						10
11	.045	-.167	-.233	-.133	-.020	-.073	-.181	-.267	-.142	-.045						11
12	.144	.020	.038	.127	.214	.132	.013	.049	.149	.233						12
13	-.030	-.178	-.214	-.114	-.015	-.079	-.195	-.250	-.124	-.039						13
14	-.106	-.228	-.237	-.218	-.178	-.132	-.250	-.270	-.257	-.229						14
15	-.028	-.131	-.150	-.119	-.110	-.062	-.151	-.176	-.147	-.132						15
16	-.096	-.171	-.201	-.136	-.155	-.117	-.200	-.229	-.155	-.176						16
17	-.077	.051	.077	.028	.017	-.085	.018	.034	.028	-.001						17
18	.100	.106	.079	.119	.172	.083	.081	.079	.134	.179						18
19	.190	.186	.197	.224	.279	.176	.161	.157	.246	.274						19
20	.235	.201	.220	.275	.343	.248	.196	.214	.297	.337						20
21	-.051	-.083	-.167	-.043	.039	-.053	-.090	-.189	-.062	.020						21
22	.051	-.028	-.104	.013	.047	.064	-.053	-.130	.001	.028						22
23	-.290	-.391	-.425	-.338	-.286	-.312	-.446	-.465	-.378	-.318						23
24	-.651	-.628	-.895	-.917	-.860	-.615	-.613	-.926	-1.001	-.922						24
25	-.123	-.131	-.127	-.114	-.076	-.144	-.151	-.149	-.115	-.096						25
26	-.030	-.034	.017	.026	.041	-.058	-.037	.032	.037	.020						26
27	.469	.361	.454	.628	.667	.494	.376	.488	.647	.659						27
28		.195	.266	.378	.397		.181	.299	.399	.390						28

TABLE I

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_\infty}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 38.6 z/D = 2.425

Tube number	n = 2915 α = 0.0					n = 2915 α = 68.0					n = 2085 α = 68.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.028			.601	.431	.448			.290	.230	.658			-.058	.151	1
2	.095	.349		-.298	-.412	.124	.252		-.427	-.070	.081	.144		-.599	-.120	2
3	.074	-.070				.030	-.105				-.011	-.043				3
4				-.227	-.360				-.250	.000				-.288	-.070	4
5	-.028	-.151		-.157	-.125	-.087	-.187		-.194	-.169	-.120	-.202		-.214	-.202	5
6	-.436	-.767		.341	.518	-.440	-.572		.444	.603	-.366	-.342		.541	.596	6
7	-.208	-.263		.100	.184	-.202	-.206		.143	.250	-.175	-.222		.175	.249	7
8	-.110	-.068		-.076	.062	-.110	-.089		-.062	.114	-.113	-.140		-.070	.120	8
9	.167	.115	.184	.174	.313	.118	.091	.242	.192	.377	.113	.113	.296	.206	.366	9
10	-.007	-.068	-.117	-.062	.026	-.070	-.103	-.143	-.068	-.011	-.085	-.124	-.183	-.070	-.023	10
11	-.030	-.188	-.262	-.155	-.003	-.089	-.223	-.282	-.183	-.043	-.120	-.253	-.319	-.191	-.066	11
12	.163	.053	.072	.151	.258	.116	.028	.095	.179	.292	.113	.031	.105	.194	.288	12
13	-.018	-.197	-.241	-.133	.007	-.084	-.221	-.271	-.158	-.036	-.085	-.253	-.303	-.171	-.054	13
14	-.121	-.267	-.275	-.269	-.199	-.175	-.305	-.297	-.324	-.290	-.206	-.327	-.327	-.335	-.296	14
15	-.039	-.167	-.189	-.157	-.127	-.093	-.208	-.209	-.198	-.171	-.113	-.218	-.241	-.233	-.202	15
16	-.093	-.227	-.280	-.150	-.180	-.143	-.276	-.280	-.206	-.227	.159	-.288	-.315	-.226	-.272	16
17	.013	.131	.150	.112	.085	.021	.062	.089	.099	.084	.007	.038	.050	.089	.097	17
18	.159	.176	.159	.205	.252	.143	.118	.156	.208	.267	.128	.101	.155	.202	.268	18
19	.250	.248	.263	.320	.381	.234	.202	.219	.328	.379	.222	.171	.191	.335	.381	19
20	.294	.273	.286	.351	.415	.284	.230	.290	.360	.410	.268	.194	.323	.381	.413	20
21	.028	-.028	-.163	-.051	.047	.009	-.061	-.175	-.080	.022	-.019	-.093	-.194	-.109	-.003	21
22	.036	-.127	-.273	-.142	-.133	.021	-.198	-.286	-.175	-.160	-.011	-.257	-.288	-.194	-.206	22
23	-.607	-1.019	-1.065	-.978	-.791	-.706	-1.129	-1.126	-1.078	-.885	-.732	-1.118	-1.149	-1.164	-.989	23
24	-.290	-.326	-1.175	-1.184	-.947	-.334	-.347	-1.204	-1.294	-1.066	-.338	-.385	-1.262	-1.390	-1.227	24
25	-.207	-.231	-.214	-.146	-.121	-.253	-.234	-.217	-.164	-.173	-.261	-.226	-.202	-.163	-.214	25
26	-.163	-.106	.015	.030	.009	-.189	-.118	.028	.024	-.034	-.218	-.116	.011	.023	-.066	26
27	.567	.425	.586	.776	.810	.536	.442	.631	.784	.801	.526	.432	.623	.806	.833	27
28		.281	.372	.514	.508		.253	.425	.517	.501		.303	.416	.526	.494	28

TABLE XII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 49.5 z/D = 2.425

Tube number	n = 2915 α = 0.0					n = 2915 α = 64.5					n = 2085 α = 64.5					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.028			.668	.438	.197			.411	.397	.293			.548	.321	1
2	.104	.354		-.266	-.546	.110			-.392	-.559	.097	.313		-.360	-.623	2
3	.087	-.068				.072					.023	.039				3
4				-.213	-.125				-.241	-.184				-.231	-.223	4
5	-.009	-.148		-.144	-.125	-.032			-.171	-.127	-.074	-.156		-.164	-.156	5
6	-.386	-.784		.316	.542	-.392			.416	.561	-.423	-.666		.399	.572	6
7	-.165	-.245		.110	.211	-.161			.152	.226	-.168	-.192		.133	.227	7
8	-.053	-.022		-.030	.053	-.055			-.024	.121	-.062	-.007		-.027	.121	8
9	.243	.171	.188	.217	.367	.217		.234	.228	.401	.180	.164	.235	.258	.380	9
10	.017	-.041	-.062	-.051	.064	-.024		-.089	-.051	.032	-.047	-.050	-.094	-.043	.027	10
11	.000	-.173	-.222	-.142	.030	-.038		-.241	-.167	.005	-.070	-.172	-.246	-.133	-.003	11
12	.230	.091	.110	.182	.299	.207		.116	.199	.315	.164	.105	.117	.227	.313	12
13	.011	-.171	-.196	-.119	.038	-.030		-.220	-.140	.015	-.043	-.172	-.215	-.117	.000	13
14	-.095	-.262	-.259	-.262	-.219	-.116		-.276	-.302	-.245	-.156	-.262	-.262	-.258	-.231	14
15	-.021	-.152	-.169	-.140	-.137	-.028		-.177	-.169	-.139	-.058	-.164	-.184	-.164	-.168	15
16	-.072	-.182	-.236	-.150	-.200	-.081		-.237	-.188	-.201	-.113	-.199	-.250	-.211	-.227	16
17	.089	.198	.222	.186	.194	.095		.184	.180	.186	.101	.172	.192	.203	.196	17
18	.238	.245	.226	.350	.356	.232		.203	.352	.352	.207	.231	.207	.356	.352	18
19	.329	.318	.341	.386	.491	.319		.304	.397	.485	.293	.301	.348	.419	.493	19
20	.346	.321	.327	.407	.518	.359		.335	.414	.514	.321	.329	.356	.442	.513	20
21	.165	.133	.070	.201	.281	.178		.100	.207	.276	.149	.133	.117	.211	.258	21
22	-.066	-.196	-.455	-.301	-.381	-.060		-.443	-.327	-.382	-.070	-.270	-.474	-.352	-.431	22
23	-.740	-1.053	-1.207	-1.302	-1.192	-.767		-1.180	-1.334	-1.206	-.787	-1.308	-1.457	-1.387	-1.293	23
24	-.224	-.224	-.942	-.935	-.838	-.230		-.759	-.799	-.848	-.266	-.243	-.948	-.909	-.897	24
25	-.207	-.320	-.289	-.245	-.186	-.201		-.308	-.308	-.205	-.235	-.333	-.286	-.266	-.239	25
26	-.167	-.234	-.127	-.062	-.028	-.180		-.192	-.144	-.047	-.211	-.196	-.113	-.094	-.082	26
27	.668	.430	.622	.933	.937	.679		.654	.854	.928	.576	.497	.713	.897	.948	27
28		.346	.409	.575	.657			.451	.590	.635		.329	.505	.627	.638	28

TABLE XIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 19.8 $\delta_{f,30}$ = 28.5 z/D = 2.425

Tube number	n = 2915 α = 0.0					n = 2915 α = 62.5					n = 2085 α = 62.5					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	-.037			.659	.487	-.020			.714	.486	.608			.242	.206	1
2	.108	.323		-.225	-.485	.105	.320		-.228	-.496	.099	.196		-.534	-.620	2
3	.156	-.075				.130	-.057				-.028	-.127				3
4				-.182	-.137				-.185	-.173				-.291	-.155	4
5	-.037	-.210		-.160	-.134	-.040	-.195		-.179	-.148	-.196	-.286		-.291	-.209	5
6	-.262	-.690		.336	.495	-.245	-.702		.312	.495	-.380	-.332		.528	.613	6
7	-.085	-.164		.155	.209	-.077	-.170		.132	.203	-.117	-.079		.209	.273	7
8	.049	.062		.056	.157	.047	.058		.047	.157	.033	.007		.035	.184	8
9	.191	.214	.243	.222	.239	.183	.196	.218	.213	.223	.178	.143	.281	.237	.224	9
10	.165	.139	.151	.186	.318	.149	.129	.147	.186	.310	.112	.071	.158	.194	.344	10
11	.060	-.034	-.042	.039	.171	.038	-.033	-.046	.041	.161	-.033	-.143	-.102	-.002	.145	11
12	.145	.085	.109	.164	.249	.146	.076	.105	.163	.227	.094	-.030	.076	.168	.245	12
13	-.205	-.498	-.463	-.289	-.205	-.294	-.476	-.467	-.302	-.224	-.452	-.674	-.625	-.449	-.316	13
14	-.539	-.827	-.778	-.698	-.667	-.565	-.795	-.768	-.729	-.680	-.855	-.970	-.929	-.802	-.799	14
15	-.132	-.310	-.307	-.228	-.164	-.206	-.304	-.313	-.250	-.168	-.324	-.403	-.398	-.393	-.457	15
16	-.166	-.271	-.280	-.130	-.144	-.180	-.267	-.287	-.143	-.148	-.298	-.352	-.352	-.224	-.224	16
17	.210	.230	.240	.266	.487	.210	.233	.245	.282	.508	.153	.260	.311	.321	.600	17
18	.391	.362	.323	.593	.679	.384	.361	.331	.616	.682	.301	.273	.452	.707	.707	18
19	.428	.431	.445	.461	.528	.423	.420	.437	.469	.534	.334	.311	.355	.526	.546	19
20	.415	.397	.373	.444	.504	.411	.384	.348	.445	.513	.360	.273	.393	.492	.528	20
21	-.082	-.119	-.191	-.040	.082	-.084	-.122	-.216	-.034	.073	-.114	-.181	-.265	-.097	.061	21
22	.092	.024	-.076	.044	.092	.092	.014	-.111	.046	.095	.145	-.132	-.168	.005	.107	22
23	-.388	-.474	-.484	-.352		-.399	-.483	-.495	-.370		-.508	-.597	-.608	-.436		23
24	-.714	-.719	-.793	-.800	-.676	-.749	-.763	-.803	-.819	-.679	-.702	-.697	-.978	-1.037	-.773	24
25	-.053	-.076	-.080	-.086	-.043	-.060	-.100	-.101	-.093	-.049	-.076	-.148	-.137	-.127	-.114	25
26	.060	.046	.016	.037	.046	.062	.038	.022	.033	.047	.007	.030	.051	.045	.002	26
27	.589	.471	.544	.681	.733	.580	.458	.542	.686	.741	.390	.426	.636	.746	.758	27
28		.323	.356	.481	.497		.287	.361	.486	.502		.286	.459	.544	.487	28

TABLE XIV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 19.8 $\delta_{f,30}$ = 38.6 z/D = 2.425

Tube number	n = 2915 α = 0.0					n = 2915 α = 57.8					n = 2085 α = 57.8					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	-.041			.616	.340	-.005			.679	.556				.737		1
2	.077	.302		-.291	-.490	.140	.331		-.275	-.482		.329		-.243		2
3	.094	-.064				.185	-.095					-.091				3
4				-.200	-.140				-.228	-.140				-.205		4
5	-.041	-.194		-.193	-.151	-.033	-.269		-.218	-.136		-.220		-.200		5
6	-.280	-.613		.357	.510	-.207	-.597		.394	.521		-.699		.273		6
7	-.043	-.100		.160	.228	-.023	-.076		.187	.236		-.144		.109		7
8	.124	.121		.088	.196	.125	.144		.093	.205		.098		.037		8
9	.232	.247	.272	.245	.287	.255	.281		.263	.296		.278	.286	.233		9
10	.189	.168	.185	.230	.368	.189	.166		.210	.398		.174	.184	.182		10
11	.071	-.001	.001	.060	.196	.054	-.042		.025	.216		-.035	-.033	.017		11
12	.170	.128	.145	.200	.293	.181	.126		.183	.306		.121	.129	.149		12
13	-.257	-.456	-.420	-.331	-.234	-.339	-.603		-.378	-.234		-.499	-.491	-.359		13
14	-.529	-.783	-.722	-.760	-.696	-.575	-.974		-.827	-.710		-.851	-.815	-.785		14
15	-.177	-.319	-.285	-.270	-.198	-.216	-.398		-.304	-.171		-.339	-.334	-.283		15
16	-.174	-.285	-.263	-.162	-.191	-.187	-.367		-.163	-.162		-.311	-.319	-.081		16
17	.228	.238	.264	.350	.575	.251	.275		.304	.624		.266	.268	.235		17
18	.370	.333	.372	.652	.698	.435	.363		.689	.761		.357	.405	.597		18
19	.403	.391	.423	.537	.599	.484	.421		.564	.646		.438	.458	.534		19
20	.420	.380	.446	.516	.582	.478	.402		.529	.624		.423	.433	.491		20
21	.039	-.009	-.083	-.009	.094	.033	-.068		-.050	.119		-.098	-.118	-.043		21
22	.090	-.132	-.170	-.121	-.075	.072	-.210		-.125	-.044		-.157	-.215	-.116		22
23	-.673	-.936	-.841	-.822	-.631	-.781	-1.089		-.919	-.638		-.947	-.972	-.881		23
24	-.563	-.584	-.838	-.942	-.754	-.669	-.732		-1.075	-.767		-.669	-.988	-1.026		24
25	-.073	-.141	-.104	-.115	-.107	-.084	-.160		-.115	-.072		-.126	-.114	-.116		25
26	.015	.009	.043	.030	.005	.017	.003		.046	.035		.020	.035	.035		26
27	.524	.514	.645	.794	.828	.636	.540		.862	.886		.577	.645	.891		27
28		.350	.452	.596	.592		.390		.628			.430	.466	.595		28

TABLE XV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 19.8$ $\delta_{f,30} = 49.5$ $z/D = 2.425$

Tube number	n = 2915 α = 0.0					n = 2915 α = 51.9					n = 2085 α = 51.9					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.166			.532	.307	.385			.417	.264	.444			.627	.370	1
2	.115	.281		-.366	-.601	.102	.256		-.408	-.617	.062	.296		-.315	-.573	2
3	.079	-.077				.032	-.098				-.003	-.085				3
4				-.243	-.217				-.250	-.224				-.222	-.187	4
5	-.105	-.235		-.249	-.224	-.134	-.264		-.258	-.239	-.136	-.237		-.226	-.198	5
6	-.264	-.484		.409	.581	-.313	-.389		.465	.621	-.276	-.467		.432	.596	6
7	-.018	-.024		.201	.290	-.028	.017		.231	.315	-.015	-.003		.218	.280	7
8	.139	.162		.118	.245	.148	.178		.129	.267	.163	.194		.128	.253	8
9	.254	.269	.256	.262	.307	.262	.258	.235	.269	.317	.280	.284	.292	.276	.335	9
10	.196	.179	.166	.241	.405	.178	.165	.144	.239	.431	.198	.191	.183	.253	.428	10
11	.049	-.015	-.062	.041	.201	.018	-.039	-.087	.030	.208	.038	-.027	-.062	.050	.218	11
12	.175	.139	.115	.203	.309	.159	.131	.085	.199	.321	.175	.151	.116	.214	.327	12
13	-.296	-.530	-.596	-.420	-.313	-.431	-.573	-.604	-.450	-.351	-.362	-.526	-.568	-.389	-.300	13
14	-.707	-.896	-.928	-.903	-.858	-.777	-.934	-.919	-.928	-.904	-.717	-.904	-.880	-.853	-.814	14
15	-.200	-.367	-.409	-.343	-.271	-.281	-.400	-.416	-.353	-.283	-.245	-.381	-.397	-.319	-.237	15
16	-.130	-.334	-.390	-.330	-.264	-.226	-.372	-.397	-.350	-.271	-.233	-.374	-.389	-.306	-.226	16
17	.247	.251	.264	.388	.656	.245	.245	.256	.393	.748	.261	.276	.292	.405	.654	17
18	.452	.341	.407	.679	.735	.484	.321	.419	.691	.788	.475	.362	.483	.783	.795	18
19	.456	.411	.428	.588	.643	.454	.381	.379	.596	.691	.444	.421	.424	.627	.709	19
20	.458	.384	.424	.549	.622	.467	.349	.406	.556	.661	.448	.389	.448	.557	.654	20
21	.209	.167	.069	.198	.277	.218	.144	.051	.180	.286	.187	.136	.089	.214	.303	21
22	-.088	-.394	-.577	-.405	-.377	-.108	-.463	-.577	-.425	-.402	-.097	-.459	-.568	-.397	-.354	22
23	-.845	-1.347	-1.466	-1.303	-1.011	-.934	-1.500	-1.531	-1.392	-1.084	-1.028	-1.582	-1.597	-1.313	-.993	23
24	-.279	-.294	-1.017	-.915	-.700	-.302	-.338	-1.080	-.987	-.763	-.421	-.424	-1.184	-1.021	-.686	24
25	-.192	-.234	-.247	-.190	-.183	-.218	-.231	-.243	-.176	-.182	-.233	-.183	-.167	-.128	-.159	25
26	-.130	-.088	-.045	-.017	-.039	-.151	-.057	-.022	.015	-.032	-.121	-.011	.043	.043	-.015	26
27	.662	.558	.686	.884	.888	.653	.524	.653	.915	.959	.596	.573	.709	.943	.958	27
28		.400	.520	.692	.673		.370	.490	.718	.737		.413	.561	.736	.732	28

TABLE XVI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 39.3$ $\delta_{f,30} = 28.5$ $z/D = 2.425$

Tube number	n = 2915 α = 0.0					n = 2915 α 49.3					n = 2085 α = 49.3					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.182			.579	.314	.362			.476	.323	.499			.514	.409	1
2	.151	.291		-.260	-.574	.088	.241		-.385	-.587	.078	.254		-.374	-.575	2
3	.159	-.062				.066	-.079				.035	-.094				3
4				-.192	-.143				-.234	-.205				-.241	-.203	4
5	-.091	-.213		-.205	-.208	-.123	-.280		-.255	-.223	-.137	-.297		-.267	-.224	5
6	-.101	-.469		.345	.568	-.159	-.317		.486	.621	-.122	-.295		.501	.631	6
7	.075	-.001		.204	.307	.073	.086		.285	.340	.086	.099		.297	.346	7
8	.235	.211		.178	.304	.252	.225		.227	.335	.269	.241		.213	.348	8
9	.336	.330	.318	.286	.343	.353	.330	.284	.295	.359	.356	.335	.280	.297	.374	9
10	.369	.348	.333	.433	.564	.382	.342	.306	.508	.632	.376	.341	.313	.526	.682	10
11	.111	.071	.060	.208	.336	.101	.025	.030	.248	.371	.111	.012	.035	.241	.389	11
12	.069	.002	-.058	.049	.112	.068	-.058	-.104	.066	.139	.071	-.086	-.124	.048	.160	12
13		-.916	-.947	-.901	-.903		-1.057	-1.062	-1.028	-.976		-1.081	-1.066	-1.071	-.969	13
14	-1.073	-1.234	-1.266	-1.083	-1.113	-1.177	-1.449	-1.429	-1.205	-1.173	-1.178	-1.499	-1.435	-1.308	-1.171	14
15	-.293	-.385	-.398	-.241		-.342	-.465	-.451	-.273		-.295	-.475	-.450	-.343		15
16	-.244	-.298	-.304	-.200	-.211	-.288	-.362	-.354	-.222	-.208	-.285	-.376	-.348	-.254	-.203	16
17	.272	.278	.294	.218	.381	.258	.253	.270	.236	.415	.280	.267	.282	.213	.391	17
18	.567	.439	.505	.852	.929	.588	.450	.537	.883	.984	.588	.440	.577	.929	1.020	18
19	.577	.569	.595	.661	.727	.601	.592	.611	.698	.793	.621	.598	.613	.712	.824	19
20	.552	.494	.522	.649	.698	.552	.463	.488	.707	.773	.557	.450	.488	.712	.766	20
21	-.094	-.130	-.185	-.039	.055	-.162	-.205	-.234	-.048	.053	-.152	-.229	-.213	-.084	.066	21
22	.163	.019	-.052	.054	.097	.094	-.023	-.087	.038	.111	.091	-.048	-.084	.015	.127	22
23	-.452	-.486	-.507	-.381		-.532	-.591	-.572	-.412		-.539	-.600	-.560	-.458		23
24	-.684	-.672	-.758	-.744	-.640	-.836	-.870	-.845	-.801	-.647	-.840	-.896	-.875	-.878	-.659	24
25	-.039	-.084	-.091	-.086	-.066	-.073	-.108	-.109	-.103	-.071	-.061	-.122	-.101	-.111	-.073	25
26	.074	.052	.027	.035	.030	.076	.051	.026	.032	.027	.086	.048	.038	.035	.028	26
27	.659	.590	.642	.777	.813	.700	.562	.602	.828	.877	.722	.562	.618	.847	.906	27
28		.426	.453	.577	.600		.377	.426	.627	.667		.379	.445	.649	.672	28

TABLE XVII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_0}$ OBSERVED ON WING

$\delta_{f,55} = 39.3$ $\delta_{f,30} = 38.6$ $z/D = 2.425$

Tube number	n = 2915 α = 0.0					n = 2915 α = 43.5					n = 2085 α = 43.5					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.399			.389	.309	.572			.299	.208	.647			.289	.271	1
2	.131	.154		-.564	-.586	.094	.204		-.459	-.659	.078	.162		-.535	-.660	2
3	.098	.086				.026	-.123				.002	-.111				3
4				-.218	-.229				-.285	-.254				-.284	-.261	4
5	-.164	-.186		-.253	-.257	-.182	-.344		-.318	-.286	-.210	-.309		-.320	-.294	5
6	-.106	-.125		.553	.583	-.156	-.126		.534	.671	-.144	-.144		.566	.672	6
7	.099	.102		.329	.362	.105	.163		.324	.391	.109	.139		.335	.396	7
8	.274	.275		.345	.366	.290	.239		.248	.386	.304	.259		.274	.396	8
9	.347	.351	.322	.394	.386	.352	.332		.300	.397	.360	.337	.294	.327	.403	9
10	.371	.377	.350	.603	.608	.392	.341		.496	.692	.391	.355	.320	.579	.718	10
11	.089	.086	.020	.336	.330	.093	.013		.202	.375	.078	.017	.005	.266	.373	11
12	.050	.039	-.126	.119	.106	.051	-.061		.025	.133	.028	-.071	-.172	.045	.116	12
13		-.688	-1.172	-.980	-.982		-1.192		-1.167	-1.101		-1.109	-1.173	-1.148	-1.125	13
14	-1.291	-1.310	-1.566	-1.248	-1.248	-1.371	-1.625		-1.339	-1.350	-1.414	-1.546	-1.597	-1.378	-1.399	14
15	-.325	-.356	-.495	.007		-.404	-.560		.408		-.447	-.535	-.533	-.299		15
16	-.250	-.248	-.419	-.280	-.279	-.361	-.458		-.275	-.295	-.383	-.441	-.436	-.317	-.320	16
17	.281	.287	.323	.440	.448	.274	.269		.263	.474	.276	.266	.284	.350	.469	17
18	.591	.577	.590	.924	.912	.584	.399		.871	1.005	.543	.436	.601	1.008	1.036	18
19	.590	.577	.582	.755	.748	.591	.556		.714	.834	.573	.556	.584	.769	.864	19
20	.574	.570	.556	.712	.703	.572	.430		.693	.800	.566	.457	.495	.728	.800	20
21	-.024	-.034	-.200	.054	.052	-.080	-.104		-.088	.039	-.071	-.094	-.210	-.040	.035	21
22	.033	.019	-.297	-.108	-.104	-.051	-.219		-.182	-.125	-.043	-.170	-.312	-.177	-.142	22
23	-.930	-.941	-1.062	-.631		-1.080	-1.123		-.986		-1.089	-1.135	-1.168	-.914		23
24	-.774	-.778	-1.053	-.807	-.782	-.938	-.893		-1.077	-.819	-.914	-.901	-1.158	-1.016	-.881	24
25	-.078	-.090	-.102	-.109	-.102	-.083	-.126		-.131	-.112	-.073	-.134	-.127	-.132	-.129	25
26	.018	.016	.056	.012	.016	.034	.047		.053	.012	.040	.038	.063	.025	.005	26
27	.711	.698	.721	.882	.875	.754	.549		.887	.962	.731	.573	.665	.934	.998	27
28		.268	.569	.685	.682		.399		.704	.769		.378	.518	.746	.789	28

TABLE XVIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_0}$ OBSERVED ON WING

$\delta_{f,55}$ = 39.3 $\delta_{f,30}$ = 49.5 z/D = 2.425

Tube number	n = 2915 α = 0.0					n = 2915 α = 42.5					n = 2085 α = 42.5					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.373			.570	.578	.488			.538	.311	.513			.502	.297	1
2	.192	.287		-.254	-.438	.090	.253		-.347	-.606	.061	.233		-.388	-.624	2
3	.193	-.068				.073	-.077				.022	-.119				3
4				-.220	-.172				-.235	-.231				-.264	-.249	4
5	-.131	-.247		-.237	-.186	-.138	-.270		-.254	-.257	-.157	-.312		-.299	-.284	5
6	.025	-.354		.391	.487	-.048	-.231		.487	.659	-.033	-.149		.513	.675	6
7	.155	.096		.281	.300	.168	.164		.336	.407	.182	.177		.340	.416	7
8	.305	.319		.294	.363	.350	.293		.299	.424	.370	.276		.294	.436	8
9	.399	.426	.343	.395	.447	.407	.398	.336	.357	.444	.381	.386	.317	.340	.431	9
10	.432	.437	.365	.537	.612	.441	.414	.364	.561	.733	.393	.388	.350	.530	.736	10
11	.109	.088	.026	.249	.367	.119	.067	.049	.262	.393	.109	.035	.035	.223	.370	11
12	.057	.012	-.120	.088	.170	.074	-.017	-.092	.088	.165	.073	-.055	-.134	.033	.134	12
13		-1.022	-1.160	-.948	-.799		-1.066	-1.138	-1.056	-1.055		-1.130	-1.148	-1.109	-1.046	13
14	-1.172	-1.428	-1.555	-1.090	-1.055	-1.268	-1.479	-1.554	-1.341	-1.311	-1.213	-1.572	-1.551	-1.330	-1.310	14
15	-.322	-.443	-.497	-.274		-.363	-.476	-.508	-.309		-.304	-.543	-.528	-.416		15
16	-.170	-.324	-.415	-.237	-.237	-.288	-.388	-.435	-.287	-.285	-.292	-.454	-.454	-.294	-.304	16
17	.320	.362	.371	.372	.459	.336	.324	.346	.343	.516	.335	.324	.330	.324	.495	17
18	.623	.537	.595	.877	.930	.636	.503	.575	.876	.996	.573	.459	.584	.901	.985	18
19	.625	.603	.612	.744	.793	.644	.647	.678	.750	.868	.604	.627	.662	.746	.866	19
20	.599	.592	.568	.696	.731	.612	.532	.542	.717	.816	.589	.497	.518	.685	.777	20
21	.226	.205	.104	.247	.307	.242	.210	.070	.227	.294	.236	.172	.071	.200	.284	21
22	-.181	-.318	-.556	-.349	-.329	-.257	-.409	-.572	-.381	-.368	-.208	-.472	-.576	-.436	-.375	22
23	-.959	-1.141	-1.359	-1.119		-1.144	-1.364	-1.471	-1.163		-1.102	-1.510	-1.554	-1.318		23
24	-.428	-.391	-.965	-.932	-.765	-.502	-.492	-1.086	-.911	-.711	-.500	-.573	-1.163	-1.061	-.698	24
25	-.137	-.176	-.158	-.117	-.101	-.152	-.124	-.109	-.123	-.126	-.142	-.124	-.121	-.137	-.147	25
26	-.067	-.046	.029	.033	.009	-.057	.006	.041	.039	.008	-.033	.028	.050	.035	.002	26
27	.761	.708	.747	.906	.939	.844	.666	.704	.925	1.033	.782	.627	.693	.919	1.003	27
28		.567	.617	.769	.782		.505	.551	.772	.865		.497	.553	.767	.843	28

TABLE XIX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 59.4 $\delta_{f,30}$ = 28.5 z/D = 2.425

Tube number	n = 2915 α = 0.0					n = 2915 α = 39.0					n = 2085 α = 36.1					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.419			.600	.384	.854			-.333	.029	.611			.545	.313	1
2	.105	.277		-.240	-.515	.046	.062		-.627	-.702	.070	.217		-.346	-.563	2
3	.092	-.098				-.034	-.176				.053	-.103				3
4				-.238	-.212				-.329	-.283				-.240	-.202	4
5	-.149	-.278		-.275	-.255	-.209	-.284		-.333	-.321	-.141	-.267		-.273	-.255	5
6	.019	-.272		.431	.577	.009	.164		.622	.697	.070	-.068		.543	.657	6
7	.201	.157		.319	.386	.196	.248		.405	.453	.252	.232		.384	.442	7
8	.371	.333		.320	.440	.363	.284		.325	.459	.424	.303		.348	.485	8
9	.395	.437	.353	.391	.491	.383	.351	.408	.346	.482	.427	.419	.449	.384	.505	9
10	.412	.448	.346	.407	.572	.415	.374	.418	.368	.552	.444	.429	.454	.429	.593	10
11	.396	.386	.378	.584	.739	.406	.331	.407	.640	.795	.424	.358	.412	.659	.806	11
12	-.427	-.572	-.833	-.664	-.591	-.438	-.417	-.670	-.729	-.693	-.460	-.591	-.672	-.692	-.649	12
13		-1.509	-1.928	-1.802	-1.620		-.982	-1.589	-1.679	-1.729		-1.698	-1.647	-1.771	-1.673	13
14	-1.011	-1.021	-1.484	-1.446	-1.217	-.396	-.416	-1.079	-1.010	-1.072	-1.159	-1.561	-1.258	-1.488	-1.172	14
15	-.384	-.487	-.545	-.418		-.314	-.243	-.429	-.365		-.318	-.495	-.470	-.386		15
16	-.356	-.386	-.433	-.297	-.304	-.276	-.243	-.347	-.338	-.385	-.323	-.343	-.333	-.265	-.310	16
17	.257	.289	.270	.192	.352	.212	.281	.277	.189	.341	.267	.290	.285	.219	.346	17
18	.631	.650	.611	.863	.920	.650	.558	.607	.860	.979	.710	.603	.626	.914	.995	18
19	.692	.699	.685	.789	.855	.670	.574	.577	.778	.892	.758	.626	.626	.844	.914	19
20	.638	.584	.574	.732	.794	.651	.450	.618	.720	.828	.697	.535	.644	.778	.846	20
21	-.218	-.246	-.302	-.125	.009	-.192	-.171	-.203	-.175	-.058	-.166	-.174	-.141	-.086	.005	21
22	.127	.012	-.151	.009	.104	.135	.034	-.025	-.042	.035	.146	.022	.027	.025	.101	22
23	-.503	-.491	-.581	-.435		-.444	-.333	-.475	-.400		-.520	-.497	-.492	-.391		23
24	-.477	-.516	-.696	-.725	-.607	-.368	-.405	-.507	-.540	-.555	-.619	-.657	-.581	-.740	-.611	24
25	-.092	-.100	-.147	-.110	-.095	-.187	-.191	-.167	-.193	-.174	-.060	-.068	-.065	-.075	-.091	25
26	-.027	-.019	-.007	.009	.005	-.151	-.140	-.039	-.141	-.115	.045	.063	.005	.055	-.005	26
27	.731	.650	.643	.820	.859	.736	.493	.665	.837	.896	.806	.593	.712	.894	.920	27
28		.516	.503	.674	.707		.392	.497	.678	.719		.460	.545	.743	.763	28

TABLE XX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 59.4 $\delta_{f,30}$ = 38.6 z/D = 2.425

Tube number	n = 2915 α = 0.0					n = 2915 α = 36.1					n = 2085 α = 39.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.473			.686	.446	.627			.672		.566			.355	.307	1
2	.099	.243		-.100	-.443	.082	.233		-.251	-.594	.063	.177		-.386	-.558	2
3	.114	-.128				.066	-.106				.058	-.134				3
4				-.216	-.131				-.206	-.200				-.249	-.177	4
5	-.124	-.272		-.249	-.155	-.151	-.253		-.206	-.220	-.132	-.332		-.284	-.200	5
6	.111	-.185		.356	.588	.121	-.106		.501	.709	.157	.053		.573	.683	6
7	.273	.231		.335	.411	.302	.251		.395	.489	.307	.264		.426	.464	7
8	.446	.443		.400	.496	.467	.381		.396	.529	.469	.327		.381	.525	8
9	.452	.510	.427	.488	.548	.466	.483	.451	.452	.574	.434	.408	.370	.411	.530	9
10	.466	.524	.432	.482	.606	.501	.503	.457	.483	.634	.449	.426	.365	.441	.609	10
11	.443	.455	.429	.579	.749	.478	.443	.421	.651	.831	.434	.363	.391	.639	.789	11
12	-.431	-.594	-.726	-.588	-.438	-.489	-.544	-.667	-.554	-.565	-.436	-.642	-.802	-.675	-.464	12
13		-1.821	-1.869	-1.755	-1.253		-1.772	-1.807	-1.564	-1.555		-1.884	-1.914	-1.800	-1.254	13
14	-1.260	-1.515	-1.606	-1.462	-.984	-1.465	-1.444	-1.515	-1.290	-1.060	-1.239	-1.615	-1.630	-1.549	-.917	14
15	-.369	-.525	-.502	-.410		-.440	-.491	-.468	-.323		-.304	-.589	-.571	-.434		15
16	-.289	-.374	-.363	-.213	-.201	-.344	-.328	-.335	-.216	-.237	-.284	-.421	-.436	-.269	-.177	16
17	.325	.365	.334	.313	.412	.283	.346	.359	.291	.429	.299	.309	.309	.256	.368	17
18	.680	.619	.629	.842	.934	.744	.785	.620	.895	.987	.713	.670	.601	.888	.957	18
19	.709	.646	.642	.799	.888	.788	.810	.809	.818	.934	.756	.685	.693	.812	.929	19
20	.680	.667	.652	.742	.816	.735	.629	.629	.758	.861	.695	.538	.558	.734	.805	20
21	.011	-.055	-.125	-.027	.109	-.060	-.068	-.098	-.003	.095	-.017	-.096	-.167	-.066	.104	21
22	.088	-.080	-.191	-.074	-.010	-.011	-.046	-.156	-.084	-.033	.017	-.127	-.246	-.152	-.028	22
23	-.743	-.770	-.803	-.713		-.869	-.708	-.747	-.566		-.815	-.827	-.909	-.756		23
24	-.614	-.559	-.788	-.773	-.620	-.721	-.703	-.714	-.748	-.642	-.713	-.751	-.761	-.876	-.624	24
25	-.034	-.028	-.044	-.054	-.049	-.044	-.023	-.018	-.057	-.057	-.028	-.071	-.076	-.088	-.063	25
26	.048	.080	.058	.066	.043	.044	.074	.049	.059	.052	.071	.063	.017	.061	.040	26
27	.772	.748	.735	.852	.928	.877	.701	.696	.893	.964	.840	.604	.635	.886	.967	27
28		.657	.621	.758	.805		.598	.555	.741	.870		.500	.515	.756	.850	28

TABLE XXI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 59.4 $\delta_{f,30}$ = 49.5 z/D = 2.425

Tube number	n = 2915 α = 0.0					n = 2915 α = 35.7					n = 2085 α = 35.7					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.382			.410	.275				.530	.174	.789			-.002	.124	1
2	.180	.229		-.358	-.521		.213		-.294	-.607	.050	.106		-.543	-.613	2
3	.197	-.125					-.110				-.010	-.136				3
4				-.280	-.148				-.220	-.203				-.317	-.197	4
5	-.084	-.368		-.323	-.176		-.296		-.236	-.229	-.175	-.314		-.360	-.246	5
6	.196	.001		.541	.655		.027		.538	.731	.124	.154		.609	.748	6
7	.349	.275		.408	.466		.327		.436	.519	.352	.299		.431	.520	7
8	.507	.351		.392	.532		.415		.426	.561	.510	.360		.400	.555	8
9	.504	.455	.468	.433	.586	.480	.503	.449	.481	.599	.466	.413	.395	.436	.558	9
10	.530	.475	.466	.443	.653	.525	.523	.457	.524	.679	.510	.446	.375	.507	.748	10
11	.485	.395	.463	.628	.792	.523	.460	.437	.656	.833	.461	.380	.426	.677	.839	11
12	-.407	-.715	-.714	-.728	-.475	-.530	-.605	-.671	-.581	-.560	-.484	-.527	-.837	-.740	-.624	12
13		-2.165	-1.732	-1.969	-1.332		-1.912	-1.799	-1.667	-1.550		-1.017	-1.826	-1.867	-1.639	13
14	-1.240	-1.876	-1.525	-1.747	-.991	-1.478	-1.521	-1.556	-1.353	-1.081	-1.519	-.875	-1.294	-1.382	-1.258	14
15	-.359	-.648	-.490	-.519		-.434	-.563	-.427	-.328		-.497	-.446	-.538	-.395		15
16	-.257	-.463	-.343	-.207	-.183	-.331	-.374	-.358	-.245	-.243	-.357	-.416	-.472	-.327	-.284	16
17	.364	.327	.346	.266	.474	.286	.343	.368	.349	.475	.390	.304	.347	.329	.484	17
18	.639	.614	.649	.897	.960	.759	.790	.626	.885	.993	.611	.588	.631	.872	.976	18
19	.698	.682	.702	.838	.904	.782	.811	.829	.807	.945	.629	.601	.613	.806	.946	19
20	.695	.591	.668	.748	.836	.759	.657	.620	.745	.870	.712	.573	.558	.736	.875	20
21	.280	.184	.169	.199	.334	.255	.234	.150	.250	.324	.296	.208	.061	.182	.312	21
22	-.098	-.444	-.418	-.387	-.241	-.244	-.258	-.404	-.286	-.274	-.099	-.284	-.555	-.451	-.296	22
23	-.846	-1.174	-1.209	-1.213		-1.045	-.850	-1.047	-.673		-1.004	-.700	-.862	-.641		23
24	-.387	-.400	-.766	-.953	-.577	-.547	-.518	-.733	-.724	-.592	-.439	-.482	-.690	-.740	-.637	24
25	-.064	-.087	-.068	-.079	-.061	-.081	-.026	-.034	-.059	-.069	-.103	-.187	-.154	-.202	-.106	25
26	.006	.067	.067	.068	.049	-.014	.059	.062	.059	.047	-.012	-.121	-.086	-.111	-.005	26
27	.771	.660	.750	.928	.942	.888	.739	.698	.989	.972	.748	.624	.654	.964	.976	27
28		.591	.669	.816	.866		.640	.589	.731	.930		.497	.558	.771	.916	28

TABLE XXII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 69.3 $\delta_{f,30}$ = 38.6 z/D = 2.425

Tube number	n = 2915 α = 0.0					n = 2915 α = 43.0					n = 2085 α = 43.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.591			.363	.267	.762			.278	.114	.677			-.027	-.345	1
2	.128	.524		-.373	-.558	.081	.158		-.417	-.610	-.010	.053		-.574	-.586	2
3	.127	-.104				.055	-.082				-.053	-.103				3
4				-.253	-.197				-.222	-.207				-.266	-.141	4
5	-.083	-.212		-.248	-.223	-.093	-.170		-.222	-.228	-.103	-.181		-.246	-.158	5
6	.172	.045		.552	.677	.185	.072		.590	.740	.143	.199		.639	.689	6
7	.335	.287		.427	.492	.357	.298		.456	.531	.367	.334		.448	.513	7
8	.492	.349		.410	.548	.505	.378		.451	.573	.476	.385		.428	.543	8
9	.441	.439	.402	.443	.546	.460	.446	.416	.492	.581	.458	.435	.410	.473	.546	9
10	.456	.459	.399	.447	.627	.494	.475	.418	.507	.628	.468	.460	.415	.483	.664	10
11	.483	.441	.442	.625	.791	.511	.461	.433	.695	.840	.428	.423	.478	.778	.836	11
12	-.783	-.844	-1.114	-1.280	-1.255	-.801	-.818	-.951	-1.290	-1.345	-.684	-.956	-1.432	-1.314	-1.107	12
13		-.755	-.923	-1.530	-1.582		-.866	-1.085	-1.658	-1.690		-1.253	-2.004	-1.538	-1.198	13
14	-.264	-.283	-.319	-.695	-.873	-.284	-.295	-.403	-.893	-.904	-.951	-1.090	-1.445	-1.105	-.916	14
15	-.207	-.249	-.249	-.317		-.195	-.241	-.246	-.227		-.352	-.375	-.508	-.236		15
16	-.225	-.246	-.247	-.363	-.352	-.197	-.232	-.281	-.310	-.322	-.251	-.277	-.345	-.272	-.199	16
17	.198	.258	.284	.186	.359	.208	.259	.281	.254	.360	.367	.246	.176	.236	.387	17
18	.683	.677	.629	.831	.874	.735	.692	.649	.850	.930	.485	.418	.609	.951	.896	18
19	.759	.754	.770	.834	.899	.795	.757	.758	.894	.951	.531	.480	.473	.969	.921	19
20	.720	.584	.603	.753	.807	.762	.619	.583	.789	.870	.589	.629	.674	.866	.848	20
21	-.009	-.030	-.095	-.101	.007	.013	.002	-.116	-.035	.044	.171	.105	-.073	.040	.126	21
22	.052	-.036	-.166	-.187	-.102	.069	-.002	-.170	-.137	-.084	.327	.065	-.196	-.073	.010	22
23	-.465	-.409	-.401	-.394		-.419	-.394	-.357	-.277		-.526	-.619	-.720	-.332		23
24	-.370	-.390	-.366	-.564	-.607	-.328	-.328	-.411	-.601	-.598	-.407	-.392	-.579	-.616	-.604	24
25	-.170	-.197	-.210	-.225	-.175	-.159	-.163	-.138	-.136	-.098	-.015	-.045	-.065	-.083	-.085	25
26	-.138	-.175	-.194	-.161	-.085	-.125	-.128	-.142	-.045	-.001	.065	.047	.065	.004	-.004	26
27	.815	.640	.659	.862	.908	.865	.664	.645	.883	.958	.538	.644	.750	.969	.926	27
28		.521	.537	.753	.837		.494	.535	.823	.907		.569	.692	.959	.841	28

TABLE XXIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α =					n = α =					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	-.758	-.630		.788	.231											1
2	.040	.347		-.263	-.502											2
3	-.008	-.055		-.297	-.243											3
4	-.017	-.124		-.220	-.101											4
5	-.036	-.098		-.154	-.054											5
6	-.931	-.892		.206	.451											6
7	-.483	-.374		-.078	.075											7
8	-.374	-.222		-.350	-.112											8
9	-.179	-.049	.028	-.067	.083											9
10	-.063	-.115	-.160	-.072	-.024											10
11	-.068	-.150	-.219	-.111	-.030											11
12	-.179	-.086	-.081	-.042	.063											12
13	-.070	-.158	-.211	-.099	-.030											13
14	-.101	-.178	-.210	-.184	-.102											14
15	-.004	-.060	-.089	-.081	-.036											15
16	-.014	-.055	-.087	-.021	-.029											16
17	-.306	-.170	-.317	-.290	-.271											17
18	-.237	-.154	-.259	-.179	-.122											18
19	-.131	-.095	-.127	-.095	-.087											19
20	-.004	.104	.056	.126	.067											20
21	-.033	-.093	-.109	-.062	-.011											21
22	-.004	.101	.054	.133	.100											22
23	-.030	-.095	-.107	-.063	-.002											23
24	.035	.015	-.028	-.001	-.014											24
25	.001	-.024	-.047	-.009	-.013											25
26	.014	.004	-.009	.031	.014											26
27	-.073	-.017	-.044	-.022	-.034											27
28		.005	-.005	.036	.007											28

TABLE XXIV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

Tube number	n = 2915 α =					n = 2915 α = 15.0					n = 2680 α = 15.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1						-.038	-.371		.673	.372	-.244	-.350		.623	.295	1
2						.130	.345		-.297	-.549	.111	.318		-.317	-.572	2
3						.019	-.073		-.307	-.313	.017	-.066		-.329	-.326	3
4						-.033	-.157		-.205	-.162	-.026	-.143		-.200	-.161	4
5						-.063	-.120		-.136	-.091	-.058	-.122		-.124	-.079	5
6						-.636	-.864		.300	.518	-.667	-.860		.305	.527	6
7						-.347	-.379		.001	.139	-.363	-.385		.013	.143	7
8						-.299	-.274		-.262	-.040	-.303	-.277		-.233	-.040	8
9						-.016	-.059	.080	.002	.164	-.009	-.036	.066	.034	.163	9
10						-.060	-.126	-.140	-.046	-.025	-.063	-.110	-.137	-.044	-.023	10
11						-.074	-.171	-.196	-.106	-.030	-.071	-.146	-.199	-.090	-.030	11
12						-.028	-.118	-.036	.022	.125	-.025	-.099	-.046	.047	.117	12
13						-.074	-.164	-.188	-.099	-.028	-.071	-.161	-.188	-.080	-.029	13
14						-.120	-.189	-.191	-.193	-.139	-.111	-.184	-.186	-.180	-.136	14
15						-.015	-.057	-.070	-.078	-.040	-.005	-.057	-.067	-.066	-.033	15
16						-.012	-.042	-.053	-.033	-.023	-.010	-.041	-.055	-.029	-.019	16
17						-.316	-.192	-.175	-.201	-.184	-.318	-.220	-.175	-.200	-.190	17
18						-.161	-.170	-.112	-.109	-.043	-.166	-.167	-.122	-.102	-.046	18
19						-.071	-.108	-.047	-.033	-.012	-.074	-.110	-.055	-.034	-.014	19
20						.057	.053	.129	.182	.113	.055	.044	.130	.156	.108	20
21						-.019	-.074	-.081	-.074	.002	-.020	-.066	-.082	-.048	.004	21
22						.061	.050	.129	.182	.161	.059	.042	.129	.173	.156	22
23						-.012	-.077	-.081	-.071	.012	-.011	-.071	-.084	-.051	.013	23
24						.001	.022	.011	-.011	-.014	.009	.011	.008	-.009	-.013	24
25						.026	.012	.001	-.008	.004	.026	.011	-.005	-.005	.002	25
26						.071	.047	.049	.050	.047	.064	.053	.039	.046	.046	26
27						.029	-.029	.036	.035	.040	.021	-.036	.025	.033	.038	27
28							.009	.064	.091	.075		-.044	.058	.086	.072	28

TABLE XXV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

Tube number	n = 2915 α =					n = 2915 α = 30.0					n = 2680 α = 30.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1						.043	-.126		.584	.697	.180	-.052		.488	.574	1
2						.180	.323		-.249	-.439	.148	.313		-.292	-.529	2
3						.221	-.076		-.304	-.326	.196	-.081		-.320	-.384	3
4						.107	-.164		-.229	-.181	.083	-.171		-.237	-.221	4
5						.000	-.133		-.141	-.104	-.013	-.137		-.143	-.128	5
6						-.356	-.836		.231	.310	-.375	-.793		.269	.396	6
7						-.285	-.425		-.004	.000	-.296	-.409		.012	.053	7
8						-.263	-.303		-.201	-.104	-.281	-.308		-.183	-.073	8
9						-.011	-.014	.150	.066	.130	-.001	-.007	.164	.097	.152	9
10						-.068	-.087	-.114	-.053	-.029	-.073	-.088	-.125	-.056	-.038	10
11						-.073	-.147	-.194	-.103	-.042	-.077	-.148	-.202	-.109	-.049	11
12						-.004	-.048	.021	.059	.099	.001	-.039	.021	.079	.111	12
13						-.069	-.158	-.184	-.089	-.036	-.077	-.155	-.190	-.097	-.045	13
14						-.085	-.191	-.205	-.181	-.151	-.094	-.193	-.213	-.195	-.183	14
15						.026	-.061	-.061	-.061	-.052	.022	-.055	-.067	-.057	-.057	15
16						.028	-.028	-.032	-.035	-.025	.025	-.022	-.032	-.033	-.028	16
17						-.221	-.112	-.022	-.130	-.158	-.264	-.107	-.017	-.122	-.156	17
18						-.082	-.043	-.029	.031	-.012	-.101	-.038	-.025	-.019	-.005	18
19						.005	.015	.031	.194	.052	-.010	.026	.039	.052	.057	19
20						.102	.141	.178	-.024	.141	.107	.146	.193	.231	.144	20
21						.022	-.041	-.043	.207	.008	.020	-.031	-.039	-.014	.013	21
22						.104	.140	.180	-.026	.195	.113	.146	.193	.242	.201	22
23						.028	-.045	-.043	.011	.019	.027	-.038	-.041	-.015	.019	23
24						.052	.019	.041	.046	-.005	.049	.032	.044	.021	-.005	24
25						.079	.062	.069	.124	.028	.082	.073	.073	.062	.037	25
26						.137	.130	.146	.123	.099	.142	.148	.152	.146	.116	26
27						.113	.102	.120	.124	.133	.106	.119	.130	.138	.140	27
28							.102	.165	.178	.181		.125	.177	.193	.190	28

TABLE XXVI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

Tube number	n = 2915 α =					n = 2915 α = 45.0					n = 2680 α = 45.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1						-.175	-.238		.640	.825	-.060	-.353		.845	.845	1
2						.337	.350		-.064	-.337	.301	.396		-.062	-.335	2
3						.328	-.108		-.258	-.251	.282	-.050		-.245	-.282	3
4						.168	-.178		-.220	-.125	.132	-.132		-.183	-.146	4
5						.045	-.125		-.133	-.062	.021	-.103		-.101	-.077	5
6						-.211	-.892		.053	.283	-.225	-.933		.055	.285	6
7						-.160	-.386		-.037	.025	-.198	-.377		-.036	.033	7
8						-.085	-.224		-.125	-.028	-.150	-.182		-.123	-.025	8
9						.103	.097	.191	.146	.221	.089	.100	.184	.152	.199	9
10						-.002	-.032	-.085	-.037	.031	-.025	-.026	-.091	-.009	.012	10
11						-.014	-.133	-.181	-.105	.017	-.036	-.094	-.181	-.062	-.002	11
12						.105	.051	.075	.120	.181	.077	.070	.065	.131	.152	12
13						-.011	-.128	-.168	-.094	.021	-.029	-.108	-.166	-.053	.000	13
14						-.031	-.197	-.194	-.194	-.120	-.049	-.165	-.189	-.164	-.137	14
15						.064	-.035	-.042	-.041	-.011	.047	-.026	-.039	-.029	-.026	15
16						.072	.000	.001	-.008	.010	.059	.009	-.006	-.006	-.002	16
17						.012	.054	.117	.022	.001	-.044	.067	.087	.013	-.026	17
18						.115	.108	.131	.103	.134	.065	.135	.096	.118	.111	18
19						.173	.168	.200	.187	.213	.147	.190	.187	.200	.193	19
20						.198	.263	.300	.326	.227	.193	.275	.292	.309	.201	20
21						.074	-.005	.004	-.008	.054	.062	.004	-.009	.002	.045	21
22						.219	.263	.301	.328	.296	.205	.275	.286	.330	.268	22
23						.090	-.010	.001	-.008	.068	.078	.000	-.010	.003	.053	23
24						.091	.071	.077	.058	.034	.082	.074	.072	.043	.021	24
25						.144	.125	.140	.100	.067	.132	.123	.118	.071	.065	25
26						.217	.220	.240	.200	.147	.212	.214	.222	.158	.143	26
27						.244	.257	.284	.264	.303	.236	.269	.269	.280	.287	27
28							.306	.327	.317	.330		.256	.311	.321	.316	28

TABLE XXVII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

Tube number	n = 2915 α =					n = 2915 α = 60.0					n = 2680 α = 60.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1						.258	.086		.640	.609	.256	.002		.649	.578	1
2						.385	.335		-.224	-.477	.332	.335		-.232	-.478	2
3						.316	-.086		-.293	-.351	.312	-.090		-.299	-.344	3
4						.136	-.160		-.222	-.191	.149	-.171		-.218	-.179	4
5						.025	-.106		-.100	-.092	.036	-.110		-.106	-.082	5
6						.044	-.597		.314	.479	-.001	-.627		.318	.485	6
7						.051	-.163		.175	.204	.036	-.147		.169	.205	7
8						.109	.034		.094	.136	.110	.061		.090	.142	8
9						.308	.264	.274	.305	.335	.296	.267	.284	.311	.343	9
10						.013	.037	.037	.023	.071	.024	.039	.046	.009	.078	10
11						-.001	-.069	-.115	-.038	.049	.009	-.073	-.107	-.058	.050	11
12						.296	.204	.207	.261	.274	.290	.205	.220	.255	.279	12
13						.000	-.062	-.096	-.023	.049	.017	-.073	-.085	-.041	.060	13
14						-.047	-.151	-.161	-.161	-.160	-.033	-.163	-.143	-.174	-.171	14
15						-.063	-.017	-.016	-.029	-.006	-.073	-.004	-.014	+.013	-.008	15
16						.081	.075	.099	.047	.047	.093	.067	.103	.024	.034	16
17						.207	.253	.277	.216	.163	.210	.269	.285	.229	.169	17
18						.278	.299	.311	.293	.287	.283	.316	.333	.301	.288	18
19						.272	.258	.348	.357	.357	.296	.295	.367	.370	.355	19
20						.284	.373	.413	.427	.329	.306	.387	.426	.443	.317	20
21						.071	.098	.129	.129	.114	.079	.088	.137	.099	.099	21
22						.302	.373	.415	.454	.399	.328	.391	.432	.459	.394	22
23						.093	.103	.123	.135	.127	.100	.096	.142	.099	.112	23
24						.093	.142	.176	.141	.090	.103	.133	.177	.125	.069	24
25						.155	.231	.249	.216	.175	.165	.226	.231	.198	.142	25
26						.229	.290	.296	.272	.268	.239	.291	.282	.269	.245	26
27						.277	.382	.393	.452	.439	.315	.393	.420	.440	.432	27
28							.358	.402	.459	.465		.387	.419	.470	.447	28

TABLE XXVIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

Tube number	n = 2915 α =					n = 2915 α = 75.0					n = 2680 α = 75.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1						.393	.113		.583	.467	.385	.232		.466	.444	1
2						.359	.315		-.231	-.546	.352	.281		-.265	-.556	2
3						.285	-.092		-.299	-.389	.286	-.122		-.308	-.391	3
4						.109	-.166		-.215	-.209	.108	-.181		-.215	-.207	4
5						.026	-.082		-.064	-.039	.023	-.051		-.009	-.049	5
6						.106	-.566		.312	.532	.086	-.487		.354	.537	6
7						.091	-.129		.191	.240	.081	-.096		.209	.241	7
8						.138	.076		.144	.165	.135	.090		.162	.165	8
9						.333	.291	.300	.350	.353	.339	.303	.288	.364	.357	9
10						.038	.075	.151	.064	.141	.044	.106	.098	.134	.135	10
11						.017	-.026	.051	.011	.123	.022	.016	-.027	.101	.119	11
12						.324	.235	.263	.294	.305	.326	.251	.217	.318	.307	12
13						.023	-.017	.069	.022	.123	.027	.032	-.014	.103	.120	13
14						-.036	-.110	.011	-.082	-.051	-.037	-.050	-.060	.024	-.062	14
15						.091	.067	.169	.101	.126	.091	.120	.109	.181	.129	15
16						.125	.143	.228	.116	.174	.119	.190	.172	.134	.185	16
17						.207	.284	.284	.246	.179	.204	.288	.283	.259	.185	17
18						.289	.318	.321	.321	.297	.292	.325	.313	.333	.305	18
19						.265	.341	.358	.362	.367	.278	.348	.354	.373	.367	19
20						.294	.383	.420	.448	.386	.304	.387	.415	.457	.392	20
21						.123	.181	.263	.203	.221	.118	.224	.218	.254	.230	21
22						.306	.387	.412	.458	.436	.323	.389	.414	.462	.435	22
23						.144	.188	.266	.210	.235	.140	.230	.213	.266	.244	23
24						.150	.209	.258	.200	.206	.143	.235	.224	.234	.220	24
25						.213	.271	.260	.234	.226	.212	.271	.261	.224	.234	25
26						.285	.303	.284	.272	.241	.283	.287	.288	.272	.235	26
27						.272	.374	.387	.409	.418	.270	.372	.386	.429	.431	27
28							.358	.387	.427	.415		.349	.391	.431	.425	28

TABLE XXIX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 00.0 z/D = 1.008

Tube number	n = 2915 α =					n = 2915 α = 90.0					n = 2680 α = 90.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1						.320	.139		.317	.424	.316	.044		.624	.523	1
2						.324	.286		-.332	-.557	.393	.336		-.243	-.523	2
3						.289	-.104		-.318	-.382	.318	-.077		-.298	-.366	3
4						.121	-.157		-.188	-.198	.130	-.146		-.201	-.188	4
5						.042	-.016		.060	-.029	.044	-.025		-.007	-.036	5
6						-.039	-.565		.374	.508	-.003	-.711		.291	.491	6
7						-.016	-.197		.150	.179	.002	-.247		.097	.174	7
8						.038	-.036		.007	.060	.059	-.070		-.035	.056	8
9						.244	.224	.263	.230	.245	.271	.215	.255	.207	.257	9
10						.045	.116	.166	.172	.120	.051	.094	.134	.123	.123	10
11						.035	.051	.135	.150	.104	.033	.040	.097	.095	.103	11
12						.244	.188	.236	.236	.227	.268	.190	.191	.204	.231	12
13						.026	.074	.144	.148	.104	.032	.056	.108	.095	.108	13
14						-.010	.004	.108	.101	-.007	-.016	-.008	.086	.033	-.009	14
15						.110	.169	.220	.207	.132	.118	.169	.226	.190	.140	15
16						.147	.227	.249	.166	.179	.158	.237	.259	.195	.201	16
17						.139	.197	.192	.102	.035	.147	.173	.205	.071	.032	17
18						.239	.255	.227	.198	.163	.239	.243	.209	.178	.164	18
19						.245	.304	.293	.280	.245	.231	.296	.279	.266	.245	19
20						.274	.342	.343	.395	.338	.277	.332	.333	.375	.351	20
21						.161	.263	.291	.266	.224	.170	.276	.297	.266	.243	21
22						.298	.345	.339	.398	.361	.286	.336	.338	.386	.376	22
23						.174	.266	.291	.271	.235	.180	.288	.303	.277	.255	23
24						.179	.273	.257	.240	.213	.194	.287	.274	.254	.238	24
25						.254	.301	.266	.251	.245	.265	.318	.286	.274	.265	25
26						.318	.333	.304	.274	.271	.322	.343	.317	.293	.296	26
27						.266	.355	.355	.358	.330	.238	.345	.348	.343	.335	27
28							.357	.380	.398	.364		.340	.386	.389	.378	28

TABLE XXX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 28.5 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 75.0					n = α =					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	-.316	-.688		.886	.749	.352	.068		.714	.541						1
2	.336	.427		-.041	-.399	.416	.342		-.173	-.502						2
3	.355	-.054		-.221	-.284	.315	-.094		-.279	-.354						3
4	.206	-.140		-.157	-.140	.125	-.168		-.207	-.190						4
5	.051	-.119		-.090	-.077	.033	-.088		-.097	-.089						5
6	-.308	-1.123		.073	.350	.084	-.628		.294	.531						6
7	-.209	-.453		-.038	.063	.105	-.139		.176	.236						7
8	-.127	-.226		-.169	-.024	.165	.071		.116	.170						8
9	.061	.077	.143	.099	.211	.362	.306	.294	.319	.381						9
10	.005	-.045	-.095	-.012	.036	.035	.088	.094	.030	.094						10
11	-.007	-.142	-.194	-.073	.020	.023	-.028	-.045	-.042	.062						11
12	.065	.046	.045	.103	.184	.354	.251	.243	.272	.317						12
13	-.012	-.141	-.177	-.057	.024	.028	-.014	-.029	-.024	.069						13
14	-.038	-.216	-.213	-.167	-.131	-.023	-.113	-.090	-.157	-.184						14
15	.000	-.115	-.113	-.063	-.062	.110	.076	.093	.029	-.019						15
16	-.059	-.145	-.158	-.067	-.076	.152	.174	.184	.022	.012						16
17	.008	.076	.088	.002	.003	.246	.304	.304	.246	.233						17
18	.100	.127	.082	.113	.147	.324	.363	.338	.319	.357						18
19	.183	.185	.196	.241	.261	.300	.326	.386	.391	.450						19
20	.200	.226	.268	.307	.336	.292	.413	.424	.444	.494						20
21	-.011	-.137	-.097	-.002	.103	.236	.267	.287	.220	.233						21
22	.076	-.051	.009	.062	.103	.249	.311	.321	.265	.248						22
23	-.227	-.360	-.363	-.243	-.152	.154	.223	.220	.078	-.008						23
24	-.585	-.711	-.745	-.791	-.683	.202	.282	.295	.106	-.180						24
25	-.065	-.088	-.095	-.086	-.061	.234	.256	.272	.239	.256						25
26	.022	.005	.007	.028	.043	.214	.245	.273	.230	.260						26
27	.336	.422	.395	.617	.667	.471	.509	.510	.646	.763						27
28		.259	.260	.371	.389		.488	.468	.481	.581						28

TABLE XXXI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 38.6 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 74.0					n = 2085 α = 74.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	-.242	-.587		.865	.756	.329	.027		.671	.539	.351	.181		.734	.596	1
2	.357	.409		-.066	-.396	.379	.333		-.196	-.501	.368	.315		-.171	-.502	2
3	.352	-.078		-.247	-.285	.317	-.102		-.287	-.354	.247	-.106		-.282	-.388	3
4	.200	-.159		-.193	-.144	.128	-.181		-.217	-.190	.065	-.179		-.224	-.237	4
5	.050	-.138		-.123	-.080	.038	-.093		-.103	-.091	.012	-.080		-.095	-.111	5
6	-.230	-1.053		.111	.345	.050	-.639		.316	.515	.080	-.611		.277	.512	6
7	-.162	-.404		-.010	.070	.071	-.142		.180	.233	.048	-.149		.176	.227	7
8	-.066	-.167		-.115	.013	.142	.084		.108	.168	.111	.070		.134	.164	8
9	.130	.136	.180	.162	.266	.343	.296	.270	.302	.385	.292	.308	.303	.340	.368	9
10	.028	-.010	-.080	-.026	.064	.039	.085	.072	.023	.097	.020	.093	.113	.048	.103	10
11	.019	-.139	-.191	-.099	.040	.027	-.039	-.072	-.051	.067	.012	-.012	-.012	-.012	.075	11
12	.128	.091	.084	.143	.221	.343	.247	.228	.264	.324	.303	.260	.249	.305	.308	12
13	.021	-.127	-.174	-.080	.048	.032	-.029	-.045	-.032	.076	.015	-.005	.000	.000	.075	13
14	-.032	-.224	-.219	-.207	-.147	-.017	-.130	-.114	-.158	-.190	-.025	-.103	-.073	-.123	-.126	14
15	-.003	-.107	-.110	-.106	-.068	.119	.059	.055	.026	-.014	.101	.086	.113	.063	-.005	15
16	[illegible]															
17	.097	.149	.163	.081	.079	.244	.324	.327	.261	.263	.214	.318	.328	.260	.237	17
18	.180	.207	.189	.193	.230	.327	.389	.331	.335	.390	.287	.376	.335	.330	.368	18
19	.243	.225	.294	.319	.355	.347	.352	.401	.436	.497	.290	.431	.424	.411	.489	19
20	.233	.294	.345	.356	.406	.353	.452	.442	.476	.531	.272	.449	.449	.462	.489	20
21	.035	.011	.002	.019	.132	.291	.302	.284	.280	.291	.257	.305	.340	.298	.282	21
22	.050	-.029	-.016	-.044	-.044	.249	.307	.249	.253	.150	.217	.298	.343	.252	.156	22
23	-.496	-.477	-.641	-.755	-.521	.045	.155	.121	.026	-.171	.103	.186	.265	.088	-.131	23
24	-.372	-.189	-.346	-.819	-.771	.254	.274	.282	.233	.128	.247	.292	.333	.262	.143	24
25	-.128	-.141	-.128	-.078	-.074	.254	.245	.233	.250	.251	.015	.257	.265	.255	.262	25
26	-.060	-.063	-.139	-.043	.035	.237	.232	.276	.249	.263	.237	.267	.282	.265	.257	26
27	.408	.535	.487	.767	.804	.647	.516	.569	.769	.865	.560	.550	.507	.762	.840	27
28		.349	.346	.467	.503		.531	.490	.534	.638		.528	.477	.505	.611	28

TABLE XXXII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 00.0 $\delta_{f,30}$ = 49.5 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 74.0					n = 2085 α = 74.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	-.222	-.448		.851	.746	.095	.143		.596	.347	.240	.257		.496	.165	1
2	.323	.420		-.062	-.378	.080	.245		-.347	-.516	.058	.177		-.408	-.515	2
3	.340	-.041		-.241	-.261	.010	-.093		-.332	-.281	-.021	-.097		-.340	-.243	3
4	.196	-.137		-.195	-.124	-.026	-.150		-.220	-.121	-.056	-.138		-.233	-.104	4
5	.055	-.133		-.135	-.077	-.029	-.091		-.126	-.041	-.038	-.085		-.145	-.068	5
6	-.202	-.928		.131	.365	-.363	-.258		.419	.543	-.367	-.221		.413	.515	6
7	-.114	-.330		.035	.104	-.041	.077		.183	.232	-.024	.070		.155	.214	7
8	-.005	-.102		-.035	.071	.145	.194		.065	.165	.185	.179		.031	.133	8
9	.170	.170	.199	.233	.323	.306	.259	.258	.322	.414	.267	.267	.289	.330	.369	9
10	.047	.013	-.056	-.006	.106	.047	.058	.042	.015	.124	.036	.034	.002	.034	.104	10
11	.038	-.102	-.189	-.088	.073	.026	-.065	-.112	-.074	.097	.014	-.063	-.158	-.038	.080	11
12	.180	.130	.122	.210	.281	.308	.198	.213	.276	.347	.265	.201	.214	.282	.313	12
13	.035	-.119	-.174	-.062	.079	.033	-.059	-.089	-.051	.104	.019	-.075	-.133	-.024	.077	13
14	-.025	-.222	-.236	-.231	-.161	-.055	-.151	-.154	-.211	-.149	-.063	-.165	-.192	-.199	-.145	14
15	.007	-.108	-.120	-.115	-.072	.081	-.002	-.023	-.038	-.004	.053	-.034	-.065	-.082	-.060	15
16	-.030	-.102	-.156	-.089	-.097	.156	.059	.013	.012	.009	.124	.021	-.031	-.034	-.043	16
17	.161	.201	.216	.169	.185	.289	.248	.246	.259	.271	.240	.245	.238	.240	.250	17
18	.227	.271	.250	.269	.328	.342	.271	.268	.357	.414	.291	.282	.289	.357	.384	18
19	.276	.338	.339	.388	.465	.363	.320	.372	.482	.544	.306	.342	.386	.491	.527	19
20	.282	.365	.383	.421	.501	.389	.332	.416	.514	.584	.340	.372	.445	.525	.549	20
21	.153	.146	.132	.234	.328	.376	.368	.321	.385	.395	.301	.274	.289	.330	.355	21
22	-.012	-.075	-.227	-.242	-.242	.328	.082	-.074	-.009	-.048	.257	.060	-.138	-.136	-.131	22
23	-.581	-.583	-.949	-1.076	-.839	.162	-.075	-.266	-.271	-.329	.085	-.167	-.420	-.530	-.420	23
24	-.196	-.161	-.367	-.634	-.797	.266	.179	.134	.134	.077	.189	.129	.056	-.189	-.155	24
25	-.151	-.148	-.209	-.227	-.090	.242	.179	.175	.159	.140	.179	.155	.153	.063	.068	25
26	-.097	-.098	-.161	-.111	.022	.224	.218	.180	.172	.155	.182	.165	.172	.136	.116	26
27	.449	.571	.602	.880	.917	.417	.456	.710	.868	.864	.335	.486	.773	.873	.868	27
28		.417	.433	.545	.646		.390	.554	.676	.667		.428	.603	.690	.642	28

TABLE XXXIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 19.8 $\delta_{f,30}$ = 28.5 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 69.0					n = 2085 α = 69.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	-.179	-.407		.804	.511	.429	.233		.434	.299	.640	.422		.072	.239	1
2	.084	.359		-.169	-.488	.104	.255		-.376	-.596	.076	.177		-.513	-.645	2
3	.064	-.067		-.264	-.292	.043	-.097		-.343	-.363	-.011	-.124		-.391	-.402	3
4	.023	-.157		-.185	-.154	-.016	-.158		-.214	-.199	-.062	-.160		-.239	-.244	4
5	-.091	-.213		-.167	-.153	.016	-.035		-.123	-.167	.031	.028		-.081	-.199	5
6	-.417	-.791		.241	.466	-.262	-.324		.454	.607	-.249	-.184		.522	.582	6
7	-.145	-.209		.090	.161	-.005	.065		.242	.295	.000	.062		.249	.283	7
8	.015	.044		.017	.123	.159	.197		.143	.242	.158	.177		.122	.230	8
9	.173	.195	.220	.207	.230	.276	.287	.237	.269	.295	.237	.247	.278	.285	.290	9
10	.148	.124	.144	.178	.320	.261	.258	.234	.272	.402	.242	.254	.239	.285	.386	10
11	.042	-.043	-.039	.044	.173	.206	.193	.154	.143	.225	.206	.206	.129	.177	.206	11
12	.135	.074	.108	.162	.250	.252	.245	.206	.241	.308	.244	.230	.196	.256	.295	12
13	-.298	-.504	-.449	-.291	-.222	.042	-.003	-.058	-.193	-.237	.117	.091	-.146	-.105	-.261	13
14	-.612	-.827	-.773	-.712	-.674	.062	.015	-.014	-.444	-.668	.143	.141	-.143	-.252	-.693	14
15	-.221	-.313	-.309	-.235	-.166	.138	.113	.111	.017	-.068	.158	.172	.072	.088	-.098	15
16	-.189	-.269	-.274	-.117	-.142	.126	.100	.091	.000	-.007	.158	.155	.062	-.038	-.028	16
17	.164	.200	.209	.219	.420	.257	.262	.255	.379	.633	.225	.235	.292	.350	.590	17
18	.325	.350	.364	.598	.654	.434	.311	.388	.639	.737	.350	.263	.415	.628	.721	18
19	.413	.397	.373	.459	.520	.444	.369	.396	.531	.602	.367	.297	.417	.520	.585	19
20	.397	.401	.366	.446	.517	.443	.373	.402	.523	.592	.391	.316	.417	.486	.561	20
21	-.107	-.132	-.193	-.017	.091	.188	.172	.143	.149	.207	.235	.254	.141	.189	.191	21
22	.070	.019	-.089	.065	.124	.288	.210	.179	.198	.208	.314	.218	.170	.249	.220	22
23	-.405	-.479	-.487	-.343	-.254	.105	.100	.044	-.058	-.070	.167	.143	.021	.000	-.110	23
24	-.721	-.745	-.787	-.774	-.620	.237	.228	.150	-.034	-.232	.254	.232	.139	.014	-.244	24
25	-.037	-.070	-.117	-.077	-.044	.255	.247	.220	.188	.169	.266	.266	.235	.199	.163	25
26	.063	.057	.036	.043	.035	.242	.237	.213	.205	.218	.249	.254	.225	.213	.215	26
27	.574	.481	.552	.696	.689	.577	.469	.556	.792	.792	.470	.407	.604	.813	.774	27
28		.330	.372	.487	.482		.383	.429	.575	.603		.347	.470	.549	.585	28

TABLE XXXIV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 19.8 $\delta_{f,30}$ = 38.6 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 64.5					n = 2085 α = 64.5					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	-.038	-.277		.764	.382	.521	.383		.388	.104	.580	.444		.527	.087	1
2	.110	.328		-.239	-.511	.091	.204		-.407	-.585	.058	.205		-.377	-.536	2
3	.018	-.069		-.300	-.282	-.019	-.109		-.348	-.317	-.053	-.101		-.326	-.275	3
4	-.038	-.161		-.213	-.145	-.082	-.176		-.233	-.176	-.096	-.164		-.207	-.154	4
5	-.124	-.204		-.218	-.147	-.065	-.150		-.204	-.157	-.101	-.171		-.193	-.144	5
6	-.522	-.665		.261	.478	-.233	-.121		.500	.628	-.220	-.116		.483	.572	6
7	-.138	-.125		.084	.159	.069	.140		.264	.322	.084	.154		.256	.304	7
8	.079	.107		.020	.138	.254	.228		.166	.271	.287	.251		.169	.270	8
9	.213	.228	.206	.211	.241	.288	.281	.275	.295	.316	.302	.299	.282	.314	.321	9
10	.164	.143	.143	.171	.334	.252	.226	.221	.276	.438	.220	.224	.212	.299	.432	10
11	.045	-.027	-.041	.014	.179	.150	.094	.025	.101	.246	.106	.043	.004	.116	.246	11
12	.145	.098	.092	.145	.262	.229	.188	.161	.238	.335	.207	.169	.144	.258	.335	12
13	-.355	-.476	-.463	-.363	-.223	-.156	-.294	-.416	-.335	-.246	-.302	-.411	-.447	-.311	-.220	13
14	-.663	-.815	-.765	-.785	-.643	-.159	-.419	-.659	-.742	-.663	-.396	-.635	-.677	-.681	-.551	14
15	-.232	-.325	-.320	-.294	-.191	.031	-.048	-.182	-.178	-.147	-.028	-.140	-.195	-.174	-.130	15
16	-.187	-.305	-.291	-.144	-.170	.040	-.031	-.132	-.091	-.104	.004	-.072	-.135	-.062	-.082	16
17	.192	.219	.209	.225	.473	.254	.261	.309	.413	.669	.265	.290	.321	.425	.609	17
18	.371	.308	.336	.637	.667	.344	.302	.471	.697	.739	.328	.333	.481	.730	.744	18
19	.386	.356	.410	.508	.567	.378	.348	.478	.597	.658	.379	.367	.485	.628	.664	19
20	.388	.354	.406	.478	.560	.414	.353	.467	.573	.648	.381	.369	.466	.584	.633	20
21	.034	.022	-.132	-.042	.118	.296	.289	.031	.097	.181	.236	.241	.041	.121	.198	21
22	.104	-.175	-.247	-.148	-.025	.351	.078	-.075	-.002	.039	.275	.038	-.074	.007	.048	22
23	-.668	-.920	-.901	-.822	-.497	.226	-.029	-.528	-.479	-.378	.157	-.278	-.510	-.502	-.340	23
24	-.393	-.926	-.906	-.905	-.600	.247	.142	-.423	-.415	-.400	.246	-.116	-.391	-.488	-.398	24
25	-.107	-.121	-.104	-.079	-.080	.272	.250	.144	.153	.045	.268	.222	.161	.113	.048	25
26	-.013	-.027	.066	.058	.011	.269	.269	.251	.232	.126	.265	.275	.261	.203	.106	26
27	.457	.493	.665	.769	.790	.409	.478	.685	.846	.854	.381	.512	.705	.875	.889	27
28		.389	.501	.599	.555		.394	.554	.685	.672		.423	.575	.730	.681	28

TABLE XXXV

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55} = 19.8$ $\delta_{f,30} = 49.5$ z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 62.5					n = 2085 α = 62.5					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	-.091	-.244		.751	.429	.507	.434		.299	.096	.523	.424		.540	.266	1
2	.095	.322		-.230	-.521	.082	.167		-.461	-.578	.064	.177		-.402	-.553	2
3	.010	-.070		-.307	-.297	-.015	-.119		-.368	-.299	-.019	-.093		-.331	-.293	3
4	-.041	-.152		-.223	-.158	-.070	-.179		-.246	-.149	-.064	-.140		-.214	-.150	4
5	-.118	-.183		-.227	-.155	-.108	-.169		-.218	-.137	-.108	-.165		-.195	-.140	5
6	-.542	-.611		.247	.446	-.202	-.072		.511	.632	-.172	-.106		.501	.612	6
7	-.122	-.078		.099	.158	.109	.152		.275	.335	.125	.170		.291	.331	7
8	.142	.154		.059	.159	.304	.230		.188	.303	.325	.266		.224	.306	8
9	.253	.258	.248	.241	.261	.338	.292	.283	.307	.348	.355	.323	.308	.345	.380	9
10	.182	.174	.174	.200	.351	.254	.218	.228	.316	.480	.256	.246	.242	.363	.484	10
11	.065	-.007	-.030	.019	.191	.112	.067	.018	.122	.283	.123	.071	.022	.160	.281	11
12	.175	.130	.108	.160	.264	.234	.175	.152	.270	.379	.237	.190	.163	.298	.380	12
13	-.372	-.466	-.490	-.396	-.233	-.344	-.371	-.466	-.357	-.227	-.372	-.412	-.446	-.311	-.222	13
14	-.638	-.778	-.773	-.811	-.644	-.475	-.574	-.702	-.736	-.607	-.518	-.647	-.689	-.713	-.620	14
15	-.205	-.295	-.330	-.393	-.199	-.024	-.088	-.199	-.164	-.123	.039	-.143	-.202	-.180	-.118	15
16	-.160	-.280	-.295	-.130	-.180	.038	-.030	-.125	-.084	-.082	.044	-.056	-.135	-.076	-.086	16
17	.226	.261	.261	.292	.508	.287	.266	.329	.481	.714	.298	.306	.340	.525	.661	17
18	.360	.330	.383	.650	.666	.381	.301	.474	.724	.770	.419	.365	.508	.778	.805	18
19	.411	.396	.460	.566	.601	.422	.347	.519	.644	.721	.449	.412	.538	.693	.743	19
20	.402	.386	.447	.528	.579	.447	.374	.508	.630	.708	.471	.427	.516	.639	.696	20
21	.177	.181	.140	.215	.301	.385	.364	.278	.364	.400	.390	.380	.276	.360	.402	21
22	-.001	-.342	-.447	-.340	-.253	.319	.016	-.240	-.111	-.118	.311	-.004	-.266	-.172	-.133	22
23	-.692	-1.142	-1.218	-1.139	-.692	.199	-.072	-.628	-.416	-.423	.190	-.358	-.735	-.644	-.461	23
24	-.235	-.805	-.878	-.834	-.533	.264	.154	-.242	-.079	-.216	.271	.004	-.422	-.328	-.252	24
25	-.146	-.135	-.110	-.073	-.111	.278	.236	.170	.123	.083	.286	.227	.140	.103	.059	25
26	-.085	-.073	.052	.056	-.003	.298	.272	.240	.181	.127	.296	.289	.229	.187	.118	26
27	.469	.521	.707	.849	.842	.453	.496	.752	.898	.910	.496	.555	.775	.943	.938	27
28		.469	.571	.676	.622		.397	.628	.750	.746		.434	.664	.792	.763	28

TABLE XXXVI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 39.3 $\delta_{f,30}$ = 28.5 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 64.4					n = 2085 α = 64.4					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.075	-.170		.644	.603	.513	.415		.336	.167	.621	.573		.310	.375	1
2	.090	.326		-.184	-.437	.089	.215		-.400	-.626	.064	.133		-.530	-.585	2
3	.087	-.067		-.282	-.308	.039	-.101		-.349	-.375	.014	-.047		-.353	-.368	3
4	.033	-.171		-.216	-.184	-.011	-.153		-.227	-.209	-.021	-.102		-.205	-.203	4
5	-.127	-.267		-.226	-.208	.031	-.032		-.140	-.181	.009	-.014		-.157	-.162	5
6	-.292	-.572		.211	.331	-.140	-.161		.508	.656	-.100	-.124		.590	.619	6
7	-.029	-.040		.126	.144	.112	.151		.315	.370	.114	.153		.349	.358	7
8	.192	.212		.146	.198	.289	.245		.245	.367	.296	.282		.305	.394	8
9	.327	.338	.313	.281	.286	.367	.347	.267	.314	.377	.358	.360	.289	.356	.384	9
10	.346	.352	.323	.377	.444	.408	.368	.322	.498	.656	.382	.387	.344	.640	.671	10
11	.095	.052	.030	.157	.260	.293	.263	.206	.325	.423	.282	.277	.207	.406	.430	11
12	.069	-.029	-.088	.032	.092	.276	.239	.105	.180	.216	.267	.246	.081	.215	.227	12
13	-.838	-1.013	-.984	-.862	-.780	-.051	-.063	-.190	-.572	-.748	-.066	-.090	-.248	-.671	-.662	13
14	-1.087	-1.297	-1.274	-1.108	-.972	.188	.170	.124	-.317	-.685	.179	.176	.093	-.538	-.540	14
15	-.314	-.395	-.377	-.314	-.269	.195	.174	.155	.052	-.073	.181	.176	.143	-.026	-.021	15
16	-.227	-.271	-.275	-.180	-.192	.187	.170	.149	.008	-.002	.186	.176	.143	.002	.011	16
17	.247	.265	.284	.198	.260	.309	.310	.256	.233	.405	.315	.332	.275	.339	.375	17
18	.509	.419	.469	.762	.785	.518	.401	.525	.831	.959	.554	.442	.576	.932	.965	18
19	.591	.523	.522	.573	.584	.565	.461	.483	.672	.777	.600	.497	.518	.764	.793	19
20	.537	.501	.499	.550	.564	.537	.452	.465	.683	.758	.549	.523	.492	.729	.719	20
21	-.115	-.097	-.146	-.037	.059	.204	.184	.179	.181	.217	.222	.270	.189	.215	.234	21
22	.129	.046	-.023	.058	.102	.329	.275	.226	.232	.252	.327	.349	.236	.267	.277	22
23	-.413	-.405	-.418	-.345	-.258	.094	.111	.082	-.009	-.072	.081	.100	.069	-.078	-.062	23
24	-.578	-.506	-.563	-.620	-.503	.119	.116	.091	-.024	-.105	.119	.117	.086	-.095	-.076	24
25	.029	.018	-.011	-.035	-.031	.184	.163	.147	.116	.096	.196	.181	.150	.095	.097	25
26	.127	.123	.113	.090	.053	.183	.170	.153	.145	.139	.191	.181	.174	.143	.163	26
27	.659	.584	.599	.664	.664	.672	.532	.549	.849	.858	.712	.578	.592	.879	.879	27
28		.459	.474	.515	.494		.395	.412	.611	.681		.349	.463	.664	.678	28

TABLE XXXVII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 39.3 $\delta_{f,30}$ = 38.6 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 61.2					n = 2085 α = 61.2					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.038	-.021		.643	.489	.509	.450		.430	.176	.728	.635		.222	.255	1
2	.091	.280		-.201	-.432	.077	.220		-.366	-.592	.062	.133		-.499	-.602	2
3	.041	-.072		-.276	-.271	.016	-.105		-.334	-.334	-.023	-.128		-.387	-.348	3
4	-.014	-.166		-.201	-.159	-.025	-.165		-.220	-.168	-.078	-.176		-.248	-.212	4
5	-.142	-.244		-.208	-.184	-.004	-.062		-.163	-.165	-.007	-.059		-.198	-.200	5
6	-.332	-.413		.233	.350	-.098	-.079		.508	.660	-.086	.004		.556	.649	6
7	.015	.058		.158	.172	.161	.189		.334	.393	.148	.183		.334	.377	7
8	.268	.260		.192	.238	.354	.255		.271	.396	.348	.255		.265	.384	8
9	.362	.366	.323	.310	.313	.406	.362	.297	.327	.402	.363	.329	.289	.329	.377	9
10	.371	.380	.335	.416	.483	.441	.388	.345	.530	.711	.389	.358	.336	.559	.702	10
11	.111	.078	.058	.192	.279	.299	.258	.201	.311	.418	.286	.231	.186	.329	.411	11
12	.083	-.003	-.056	.063	.117	.304	.222	.067	.161	.216	.286	.181	.052	.141	.207	12
13	-.844	-.955	-.895	-.814	-.716	-.149	-.169	-.379	-.693	-.794	-.081	-.179	-.365	-.769	-.788	13
14	-1.090	-1.232	-1.184	-1.047	-.885	.148	.123	-.030	-.562	-.888	.176	.121	-.042	-.697	-.855	14
15	-.303	-.380	-.359	-.306	-.249	.158	.135	.098	-.004	-.128	.186	.133	.095	-.062	-.138	15
16	-.211	-.269	-.267	-.176	-.184	.154	.127	.091	-.025	-.042	.176	.143	.105	-.066	-.047	16
17	.288	.295	.301	.255	.319	.365	.325	.288	.265	.478	.346	.301	.296	.305	.425	17
18	.497	.438	.484	.759	.763	.487	.392	.577	.850	.926	.480	.370	.594	.898	.932	18
19	.543	.524	.540	.603	.619	.552	.451	.531	.717	.807	.535	.422	.542	.745	.805	19
20	.511	.513	.503	.560	.580	.625	.458	.519	.694	.792	.597	.453	.506	.712	.740	20
21	.024	.018	-.079	.014	.085	.352	.353	.179	.163	.237	.365	.367	.200	.181	.234	21
22	.076	-.056	-.173	-.079	-.052	.421	.203	.098	.084	.121	.415	.238	.124	.073	.090	22
23	-.592	-.651	-.713	-.610	-.456	.032	.037	-.019	-.131	-.259	.055	.040	-.009	-.196	-.258	23
24	-.344	-.516	-.643	-.644	-.505	.093	.059	.009	-.120	-.310	.105	.057	.016	-.186	-.286	24
25	.013	.010	-.009	-.030	-.048	.167	.135	.101	.074	.081	.176	.143	.124	.064	.069	25
26	.078	.096	.117	.084	.041	.166	.149	.110	.103	.134	.179	.152	.133	.119	.121	26
27	.626	.596	.647	.721	.729	.634	.536	.648	.900	.894	.618	.513	.652	.922	.910	27
28		.492	.525	.584	.564		.421	.428	.721	.750		.391	.403	.740	.743	28

TABLE XXXVIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_c}$ OBSERVED ON WING

$\delta_{f,55}$ = 39.3 $\delta_{f,30}$ = 49.5 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 59.0					n = 2085 α = 59.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.168	.056		.665	.498	.678	.487		.368	.162	.716	.597		.223	.232	1
2	.090	.281		-.182	-.408	.078	.184		-.404	-.605	.057	.161		-.455	-.614	2
3	.027	-.066		-.268	-.258	.000	-.118		-.354	-.343	-.019	-.123		-.365	-.356	3
4	-.035	-.158		-.192	-.150	-.048	-.174		-.236	-.185	-.068	-.170		-.244	-.203	4
5	-.154	-.236		-.196	-.167	-.010	-.084		-.194	-.177	-.014	-.066		-.189	-.203	5
6	-.263	-.316		.241	.362	-.062	-.003		.532	.678	-.035	.047		.564	.678	6
7	.077	.113		.180	.198	.192	.196		.349	.417	.201	.227		.379	.417	7
8	.311	.282		.225	.276	.378	.251		.287	.426	.394	.265		.327	.432	8
9	.368	.388	.343	.331	.339	.417	.344	.318	.333	.438	.403	.374	.325	.365	.432	9
10	.380	.392	.351	.440	.519	.465	.383	.372	.558	.734	.436	.391	.367	.569	.740	10
11	.115	.084	.073	.215	.304	.303	.234	.201	.303	.424	.280	.265	.196	.322	.422	11
12	.084	.008	-.040	.084	.141	.290	.183	.058	.139	.216	.275	.216	.080	.144	.196	12
13	-.867	-.950	-.901	-.785	-.669	-.159	-.248	-.434	-.779	-.828	-.170	-.189	-.372	-.766	-.856	13
14	-1.101	-1.221	-1.172	-1.014	-.818	.154	.087	-.118	-.727	-.947	.144	.120	-.019	-.683	-.977	14
15	-.303	-.370	-.349	-.285	-.228	.165	.110	.077	-.053	-.148	.158	.137	.104	-.038	-.182	15
16	-.099	-.188	-.266	-.161	-.168	.165	.108	.075	-.056	-.062	.156	.132	.095	-.064	-.078	16
17	.311	.321	.324	.280	.349	.375	.317	.321	.347	.537	.370	.337	.322	.370	.503	17
18	.507	.439	.488	.781	.754	.523	.386	.594	.866	.933	.545	.401	.567	.873	.965	18
19	.538	.518	.552	.630	.641	.565	.442	.561	.754	.833	.581	.457	.522	.754	.854	19
20	.518	.500	.503	.580	.603	.641	.464	.545	.718	.805	.631	.488	.505	.711	.788	20
21	.221	.220	.165	.246	.279	.490	.480	.338	.366	.415	.477	.481	.365	.384	.412	21
22	-.073	-.235	-.381	-.249	-.227	.301	.084	-.047	-.105	-.098	.244	.120	.004	-.085	-.130	22
23	-.596	-.798	-.921	-.785	-.544	.006	-.026	-.078	-.245	-.417	-.021	.004	-.059	-.249	-.465	23
24	-.130	-.417	-.589	-.575	-.395	.081	.021	-.028	-.188	-.311	.057	.059	.002	-.187	-.370	24
25	-.025	-.017	.326	-.034	-.055	.161	.107	.084	.047	.066	.154	.147	.123	.066	.047	25
26	.016	.048	.490	.077	.026	.165	.135	.098	.084	.126	.166	.156	.113	.104	.120	26
27	.626	.594	.550	.754	.767	.681	.538	.679	.923	.934	.711	.555	.645	.968	.970	27
28		.512	.511	.641	.620		.431	.560	.794	.812		.436	.441	.785	.835	28

TABLE XXXIX

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 59.4 $\delta_{f,30}$ = 28.5 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 59.0					n = 2085 α = 59.0					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.272	.009		.773	.658	.676	.589		.210	.200	.690	.549		.529	.391	1
2	.119	.351		-.043	-.363	.090	.170		-.429	-.606	.064	.205		-.324	-.539	2
3	.153	-.077		-.245	-.259	.095	-.089		-.352	-.372	.096	-.099		-.299	-.329	3
4	.076	-.171		-.193	-.148	.031	-.142		-.226	-.200	.029	-.141		-.195	-.173	4
5	-.067	-.199		-.188	-.165	.002	-.053		-.143	-.135	.004	-.061		-.131	-.131	5
6	.003	-.372		.171	.361	.139	.073		.576	.693	.185	-.044		.532	.673	6
7	.180	.166		.216	.241	.280	.265		.418	.468	.301	.250		.396	.460	7
8	.352	.398		.314	.356	.430	.320		.385	.500	.450	.331		.373	.509	8
9	.431	.483	.453	.427	.436	.475	.448	.424	.494	.566	.462	.477	.440	.448	.552	9
10	.452	.502	.456	.432	.489	.507	.466	.431	.472	.572	.485	.490	.455	.487	.589	10
11	.447	.456	.407	.519	.610	.549	.455	.494	.688	.836	.505	.467	.462	.675	.846	11
12	-.278	-.377	-.519	-.441	-.372	-.116	-.027	-.257	-.336	-.345	-.121	-.084	-.279	-.356	-.366	12
13	-.837	-.883	-1.084	-1.253	-1.084	-.174	-.031	-.286	-.605	-.688	-.163	-.096	-.309	-.700	-.831	13
14	-.360	-.314	-.435	-.768	-.789	.137	.149	.088	-.047	-.120	.141	.131	.084	-.081	-.247	14
15	-.216	-.273	-.274	-.281	-.255	.139	.142	.110	.035	-.017	.133	.123	.108	.034	-.059	15
16	-.192	-.246	-.274	-.154	-.164	.137	.134	.110	.015	.009	.143	.121	.108	-.014	-.007	16
17	.288	.339	.338	.241	.313	.281	.340	.394	.252	.342	.287	.378	.346	.279	.326	17
18	.618	.531	.575	.840	.815	.820	.518	.610	.881	.998	.822	.547	.626	.873	1.007	18
19	.695	.647	.664	.728	.736	.856	.586	.587	.796	.931	.871	.616	.601	.806	.945	19
20	.645	.634	.644	.686	.690	.780	.598	.578	.765	.863	.777	.618	.594	.767	.851	20
21	-.083	-.093	-.159	-.054	.078	.169	.164	.153	.172	.203	.203	.195	.175	.178	.203	21
22	.218	.124	-.002	.067	.131	.383	.328	.228	.207	.212	.391	.339	.250	.230	.215	22
23	-.313	-.337	-.396	-.354	-.241	.021	.065	.031	-.039	-.082	.034	.047	.029	-.054	-.104	23
24	-.230	-.224	-.314	-.440	-.408	.060	.061	.052	-.044	-.096	.074	.052	.064	-.049	-.104	24
25	-.056	-.056	-.084	-.056	-.019	.132	.127	.114	.093	.074	.143	.106	.131	.084	.064	25
26	-.031	-.026	-.033	.018	.054	.123	.118	.117	.112	.111	.128	.121	.123	.106	.099	26
27	.734	.693	.705	.761	.743	.891	.612	.603	.847	.942	.908	.653	.609	.824	.965	27
28		.570	.587	.621	.603		.453	.525	.684	.807		.515	.495	.675	.816	28

TABLE XL

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 59.4 $\delta_{f,30}$ = 38.6 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 58.2					n = 2085 α = 58.2					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.237	.157		.754	.584	.488	.470		.534	.321	.737	.661		.379	.198	1
2	.253	.297		-.008	-.316	.315	.260		-.267	-.552	.031	.154		-.404	-.592	2
3	.269	-.087		-.232	-.207	.298	-.075		-.297	-.352	-.002	-.100		-.340	-.335	3
4	.138	-.150		-.175	-.106	.134	-.133		-.201	-.181	-.031	-.149		-.213	-.171	4
5	-.052	-.184		-.157	-.105	.026	-.041		-.127	-.136	-.019	-.080		-.161	-.139	5
6	.195	-.200		.176	.431	.282	-.035		.514	.687	.139	.071		.585	.727	6
7	.304	.260		.267	.324	.343	.312		.415	.490	.330	.281		.438	.497	7
8	.434	.436		.378	.443	.445	.464		.416	.521	.502	.340		.411	.536	8
9	.460	.508	.532	.476	.525	.467	.535	.463	.501	.589	.472	.458	.409	.453	.558	9
10	.480	.521	.544	.470	.547	.553	.569	.495	.512	.575	.499	.482	.392	.546	.703	10
11	.470	.473	.473	.552	.680	.689	.601	.467	.657	.842	.507	.463	.509	.717	.842	11
12	-.310	-.408	-.570	-.391	-.281	-.210	-.040	-.130	-.305	-.371	-.056	-.105	-.423	-.416	-.377	12
13	-1.100	-1.177	-1.453	-1.178	-.830	-.446	-.028	-.143	-.766	-1.013	-.115	-.213	-.465	-.810	-.869	13
14	-.735	-.638	-.956	-.853	-.656	.081	.133	.107	-.180	-.433	.149	.105	.031	-.129	-.205	14
15	-.268	-.329	-.357	-.251	-.157	.086	.140	.109	.000	-.099	.154	.154	.080	-.012	-.095	15
16	-.210	-.235	-.250	-.103	-.095	.083	.118	.089	-.029	-.040	.154	.124	.083	-.056	-.046	16
17	.334	.366	.403	.304	.363	.268	.381	.441	.294	.347	.389	.387	.252	.330	.460	17
18	.669	.571	.620	.850	.892	.915	.639	.565	.866	1.012	.663	.516	.671	.909	.957	18
19	.725	.652	.715	.762	.814	.880	.706	.633	.772	.948	.717	.563	.637	.854	.938	19
20	.666	.646	.684	.707	.738	.828	.783	.658	.736	.868	.730	.585	.617	.796	.869	20
21	.041	.027	.002	.062	.142	.244	.254	.245	.198	.192	.340	.325	.191	.193	.237	21
22	.105	.033	-.045	-.007	.000	.284	.367	.219	.121	.026	.384	.230	.115	.090	.139	22
23	-.399	-.348	-.477	-.452	-.342	-.090	-.021	-.051	-.101	-.182	-.002	.002	-.039	-.151	-.195	23
24	-.242	-.214	-.350	-.457	-.414	.010	-.029	-.034	-.095	-.165	.024	.027	.012	-.122	-.164	24
25	.021	.034	.039	-.002	.016	.114	.077	.076	.062	.033	.139	.105	.115	.063	.061	25
26	.051	.057	.109	.071	.076	.107	.107	.094	.095	.071	.144	.110	.122	.090	.085	26
27	.782	.711	.769	.847	.873	.940	.833	.680	.993	.976	.781	.617	.678	.921	.957	27
28		.639	.674	.693	.748		.662	.587	.668	.885		.472	.492	.801	.869	28

TABLE XLI

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_\infty}$ OBSERVED ON WING

$\delta_{f,55}$ = 59.4 $\delta_{f,30}$ = 49.5 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 57.8					n = 2085 α = 57.8					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.220	.193		.628	.293	.802	.676		.200	.007	.758	.744		.062	.002	1
2	.084	.252		-.152	-.381	.056	.129		-.441	-.649	.011	.084		-.511	-.607	2
3	.071	-.066		-.247	-.193	.009	-.126		-.363	-.356	-.035	-.096		-.336	-.312	3
4	.021	-.136		-.172	-.091	-.041	-.173		-.239	-.181	-.072	-.139		-.206	-.168	4
5	-.102	-.204		-.173	-.124	-.011	-.090		-.171	-.132	-.038	-.069		-.160	-.146	5
6	.111	-.056		.308	.492	.150	.157		.603	.757	.127	.139		.667	.732	6
7	.333	.302		.315	.350	.366	.291		.457	.525	.357	.321		.492	.509	7
8	.485	.408		.384	.442	.521	.361		.422	.563	.514	.417		.480	.557	8
9	.470	.492	.452	.457	.484	.521	.453	.397	.456	.593	.506	.494	.413	.514	.554	9
10	.475	.488	.465	.488	.552	.553	.497	.362	.529	.744	.511	.518	.381	.648	.698	10
11	.455	.444	.419	.597	.648	.551	.481	.500	.694	.833	.502	.499	.576	.797	.823	11
12	-.336	-.443	-.546	-.414	-.328	-.009	-.083	-.420	-.382	-.352	-.016	-.089	-.465	-.417	-.391	12
13	-1.273	-1.456	-1.453	-1.181	-.902	-.051	-.199	-.441	-.693	-.734	-.110	-.206	-.557	-.893	-.900	13
14	-.973	-1.047	-1.183	-.907	-.627	.171	.095	.016	-.064	-.099	.136	.086	.016	-.259	-.281	14
15	-.300	-.397	-.351	-.262	-.187	.171	.095	.050	.010	-.036	.141	.100	.062	-.052	-.098	15
16	-.211	-.260	-.225	-.126	-.109	.176	.105	.058	-.017	-.021	.149	.120	.064	-.052	-.067	16
17	.351	.350	.376	.317	.384	.440	.403	.239	.366	.531	.504	.454	.247	.441	.463	17
18	.624	.536	.600	.842	.789	.629	.490	.661	.889	.951	.598	.542	.691	.951	.920	18
19	.682	.619	.673	.762	.760	.674	.530	.637	.839	.926	.605	.562	.663	.912	.927	19
20	.649	.612	.640	.694	.693	.767	.572	.619	.782	.875	.679	.614	.643	.850	.828	20
21	.262	.253	.222	.295	.321	.549	.525	.340	.396	.434	.511	.506	.367	.422	.391	21
22	-.091	-.191	-.312	-.172	-.136	.320	.117	-.049	-.050	-.042	.393	.254	-.028	-.086	-.115	22
23	-.626	-.620	-.750	-.587	-.400	-.051	-.023	-.082	-.164	-.194	-.035	-.028	-.086	-.254	-.285	23
24	-.282	-.343	-.495	-.463	-.342	-.025	.002	-.011	-.091	-.110	-.002	.024	-.014	-.184	-.218	24
25	.007	.043	.039	-.004	-.023	.125	.092	.097	.076	.076	.120	.120	.110	.055	.040	25
26	.081	.093	.143	.086	.045	.150	.118	.110	.098	.112	.141	.132	.115	.096	.081	26
27	.742	.673	.744	.797	.814	.775	.595	.685	.931	.949	.638	.598	.711	.996	.963	27
28		.588	.631	.717	.703		.476	.482	.819	.909		.473	.641	.898	.886	28

TABLE XLII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_s}$ OBSERVED ON WING

$\delta_{f,55}$ = 69.3 $\delta_{f,30}$ = 28.5 z/D = 1.008

Tube number	n = 2915 α = 0.0					n = 2915 α = 58.8					n = 2085 α = 58.2					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.236	.175		.742	.465	.714	.627		.357	.127	.533	.501		.570	.334	1
2	.150	.286		-.003	-.333	.096	.171		-.359	-.621	.178	.225		-.287	-.580	2
3	.179	-.085		-.229	-.205	.093	-.097		-.322	-.361	.220	-.084		-.309	-.359	3
4	.104	-.137		-.173	-.107	.028	-.138		-.198	-.180	.121	-.124		-.188	-.196	4
5	-.028	-.137		-.145	-.116	.024	-.044		-.118	-.104	.049	-.022		-.109	-.129	5
6	.167	-.171		.164	.457	.204	.081		.567	.732	.300	.012		.540	.692	6
7	.302	.271		.269	.332	.351	.309		.446	.518	.364	.322		.436	.510	7
8	.439	.450		.386	.440	.497	.368		.430	.559	.481	.451		.446	.558	8
9	.461	.517	.476	.474	.487	.506	.476	.427	.492	.588	.520	.563	.486	.533	.597	9
10	.478	.529	.497	.465	.517	.545	.493	.443	.497	.608	.567	.570	.510	.506	.533	10
11	.488	.510	.466	.532	.639	.563	.485	.453	.667	.859	.622	.567	.481	.672	.848	11
12	-.629	-.749	-.992	-.944	-.852	-.414	-.312	-.727	-.878	-.949	-.518	-.309	-.530	-.917	-1.044	12
13	-.700	-.647	-1.045	-1.196	-.989	-.007	.061	-.201	-.482	-.439	-.126	.074	-.039	-.647	-.724	13
14	-.203	-.243	-.415	-.616	-.652	.145	.133	.045	-.076	-.079	.091	.143	.094	-.111	-.203	14
15	-.159	-.210	-.281	-.282	-.225	.134	.123	.074	-.008	-.020	.096	.143	.104	-.012	-.081	15
16	-.139	-.188	-.278	-.146	-.134	.148	.123	.072	.000	-.004	.101	.136	.086	-.029	-.037	16
17	.241	.289	.300	.222	.294	.249	.332	.288	.248	.372	.255	.357	.406	.238	.260	17
18	.684	.561	.612	.827	.812	.800	.548	.624	.847	.948	.833	.645	.627	.883	1.009	18
19	.768	.669	.704	.785	.800	.870	.619	.615	.823	.959	.885	.734	.655	.840	.994	19
20	.699	.670	.671	.722	.724	.800	.632	.599	.769	.878	.828	.749	.669	.803	.893	20
21	-.054	-.042	-.156	-.046	.092	.178	.169	.115	.144	.195	.186	.196	.181	.161	.166	21
22	.241	.180	.016	.074	.128	.394	.335	.195	.202	.225	.429	.471	.297	.208	.166	22
23	-.271	-.289	-.400	-.340	-.205	.034	.032	-.008	-.070	-.098	-.017	.032	-.014	-.089	-.146	23
24	-.223	-.255	-.317	-.386	-.354	.050	.019	.012	-.079	-.117	.020	-.007	-.010	-.099	-.141	24
25	-.078	-.068	-.086	-.057	-.009	.109	.076	.073	.058	.060	.096	.084	.067	.049	.017	25
26	-.052	-.038	-.019	.009	.057	.103	.085	.079	.080	.086	.086	.089	.076	.074	.067	26
27	.791	.713	.744	.784	.802	.890	.651	.619	.898	.950	.893	.776	.672	.912	.984	27
28		.613	.615	.676	.678		.524	.527	.702	.865		.627	.672	.684	.863	28

TABLE XLIII

PRESSURE COEFFICIENTS $\frac{\Delta p}{q_a}$ OBSERVED ON WING

$\delta_{f,55} = 69.3$ $\delta_{f,30} = 38.6$ $z/h = 1.008$

Tube number	n = 2915 α = 0.0					n = 2915 α = 58.2					n = 2085 α = 58.8					Tube number
	Spanwise station					Spanwise station					Spanwise station					
	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	92.0	110.0	118.0	126.0	140.5	
1	.200	.195		.564	.595	.677	.659		.141	.096	.821	.732		.380	.185	1
2	.279	.260		-.403	-.400	.192	.141		-.614	-.631	.056	.155		-.351	-.615	2
3	.274	.274		-.241	-.250	.169	.167		-.371	-.380	.064	-.126		-.321	-.365	3
4	.133	.138		-.119	-.129	.082	.068		-.189	-.200	.010	-.163		-.205	-.188	4
5	-.026	-.016		-.115	-.119	.036	.039		-.127	-.132	.024	-.052		-.126	-.118	5
6	.225	.236		.488	.459	.276	.274		.737	.744	.304	.173		.600	.751	6
7	.325	.344		.362	.344	.378	.384		.541	.543	.415	.353		.487	.548	7
8	.435	.460		.481	.469	.503	.507		.576	.571	.548	.407		.460	.588	8
9	.453	.465	.458	.528	.517	.525	.527	.442	.605	.597	.489	.472	.417	.509	.588	9
10	.469	.483	.471	.551	.529	.549	.550	.472	.582	.583	.494	.497	.440	.501	.613	10
11	.488	.494	.446	.693	.667	.634	.630	.474	.855	.859	.558	.506	.464	.675	.870	11
12	-.625	-.611	-.999	-.929	-.913	-.531	-.503	-.573	-1.029	-1.029	-.472	-.318	-.630	-.942	-.994	12
13	-.642	-.657	-1.087	-1.111	-1.106	-.067	-.049	-.071	-.703	-.650	.024	.079	-.061	-.625	-.598	13
14	-.172	-.178	-.395	-.741	-.748	.137	.143	.094	-.207	-.189	.163	.140	.101	-.106	-.138	14
15	-.144	-.151	-.284	-.224	-.229	.127	.142	.102	-.108	-.091	.148	.136	.091	-.017	-.064	15
16	-.125	-.133	-.283	.138	-.149	.134	.149	.091	-.056	-.048	.168	.136	.093	-.017	-.032	16
17	.232	.242	.311	.332	.305	.219	.223	.359	.362	.359	.249	.358	.311	.239	.361	17
18	.648	.623	.599	.882	.873	.902	.878	.606	.962	.962	.840	.558	.615	.867	.951	18
19	.740	.730	.689	.846	.836	.929	.906	.614	.969	.970	.909	.625	.590	.855	.986	19
20	.693	.694	.662	.774	.756	.846	.842	.608	.881	.884	.821	.655	.596	.788	.870	20
21	.067	.071	-.084	.116	.100	.294	.295	.188	.198	.200	.311	.304	.197	.192	.229	21
22	.111	.120	-.154	-.038	-.057	.313	.319	.133	.042	.045	.321	.284	.136	.091	.096	22
23	-.308	-.320	-.482	-.397	-.407	-.020	-.013	-.043	-.184	-.186	.000	.010	-.034	-.123	-.175	23
24	-.224	-.241	-.380	-.477	-.477	-.002	-.004	-.037	-.160	-.161	.004	-.012	-.022	-.101	-.136	24
25	-.073	-.073	-.084	.009	-.003	.089	.084	.055	.030	.027	.096	.084	.071	.056	.044	25
26	-.048	-.048	-.007	.085	.077	.089	.087	.062	.069	.068	.106	.091	.079	.081	.084	26
27	.788	.784	.737	.869	.863	.942	.924	.642	.975	.972	.949	.675	.628	.897	.989	27
28		.464	.649	.777	.765		.482	.514	.932	.929		.551	.509	.759	.937	28

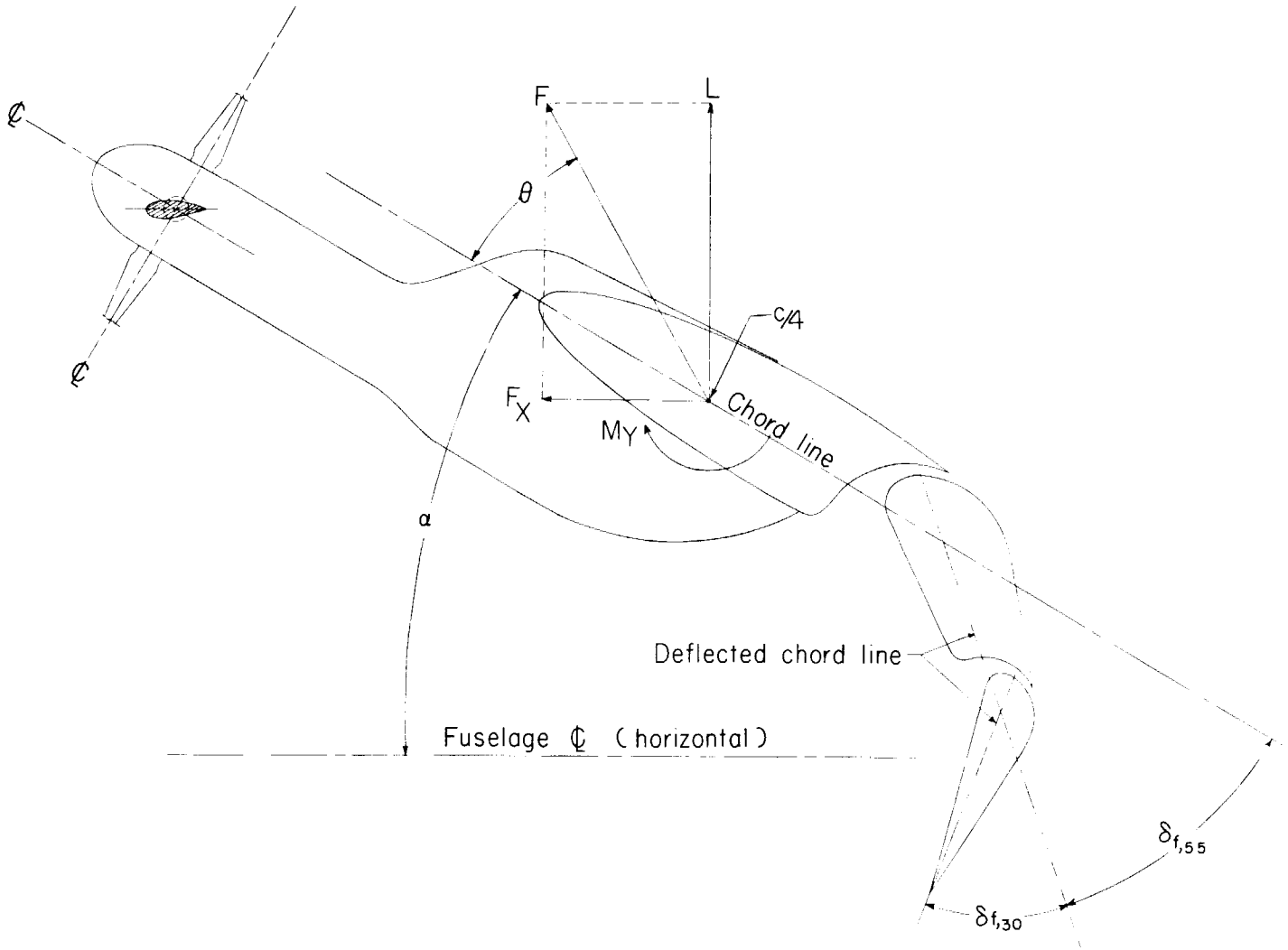


Figure 1.- Conventions used to define positive sense of forces, moments, and angles.

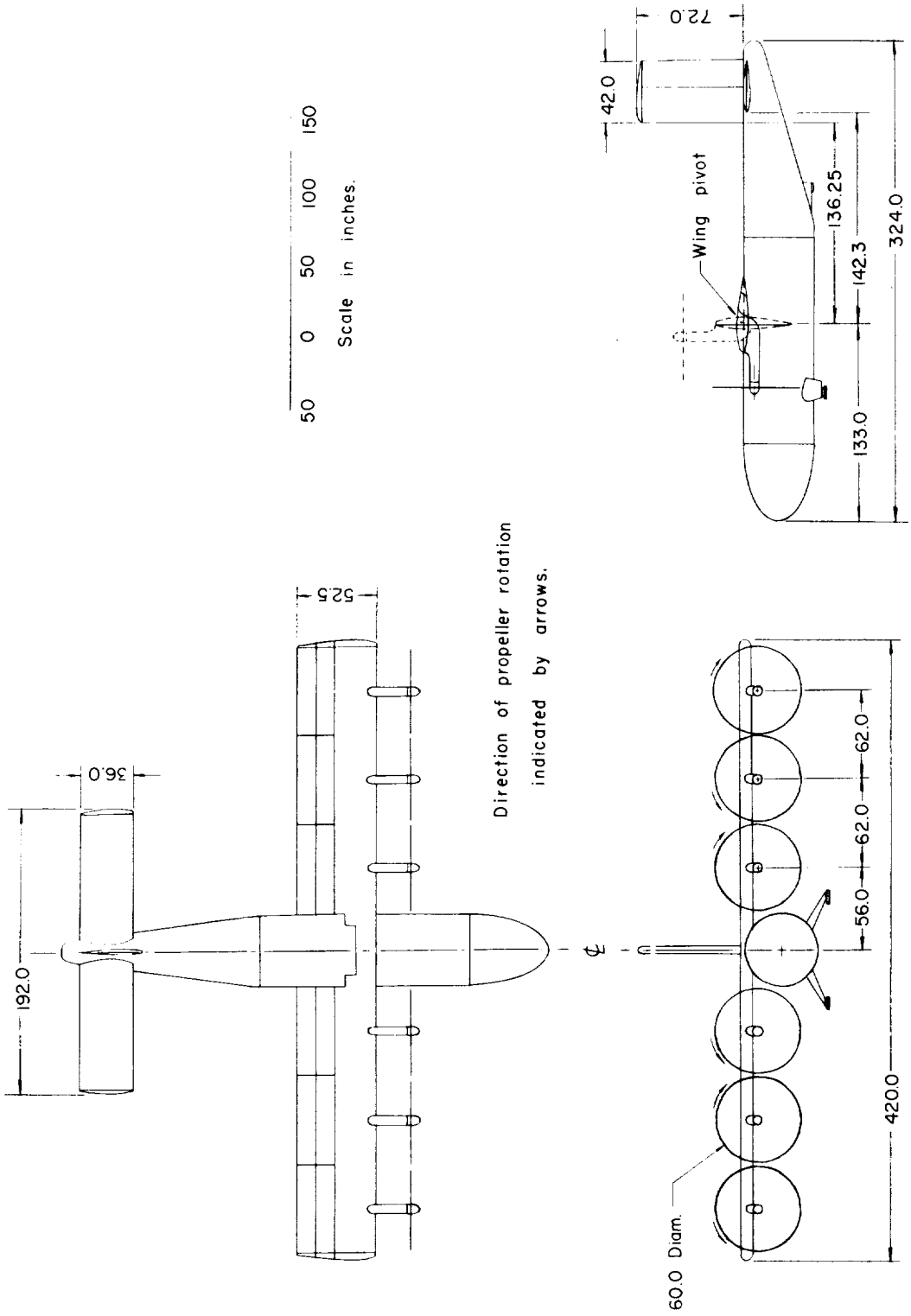


Figure 2.- Three-view sketch of model. All dimensions are in inches.

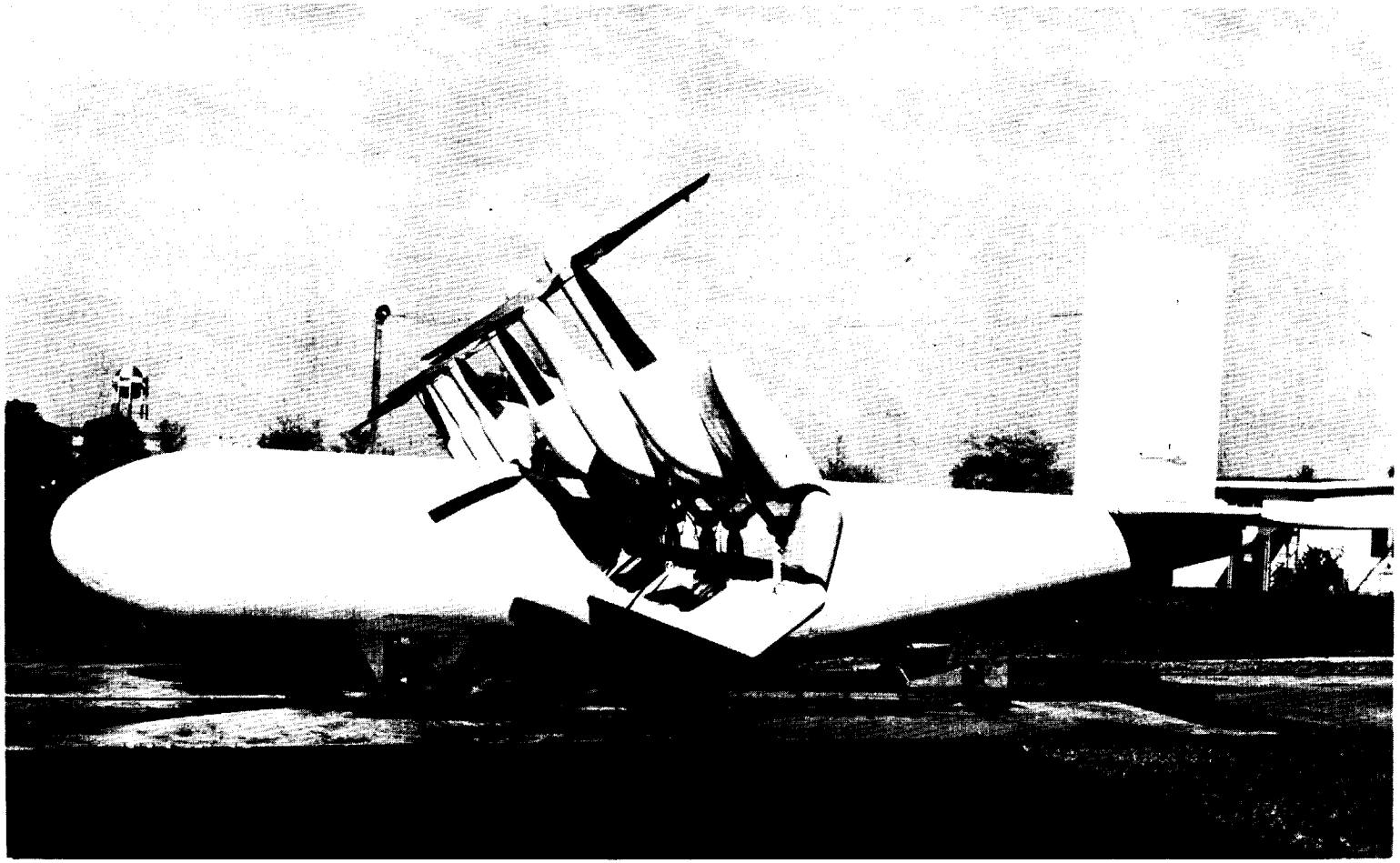


Figure 3.- Model on balance at z/D = 1.008. L-59-7989

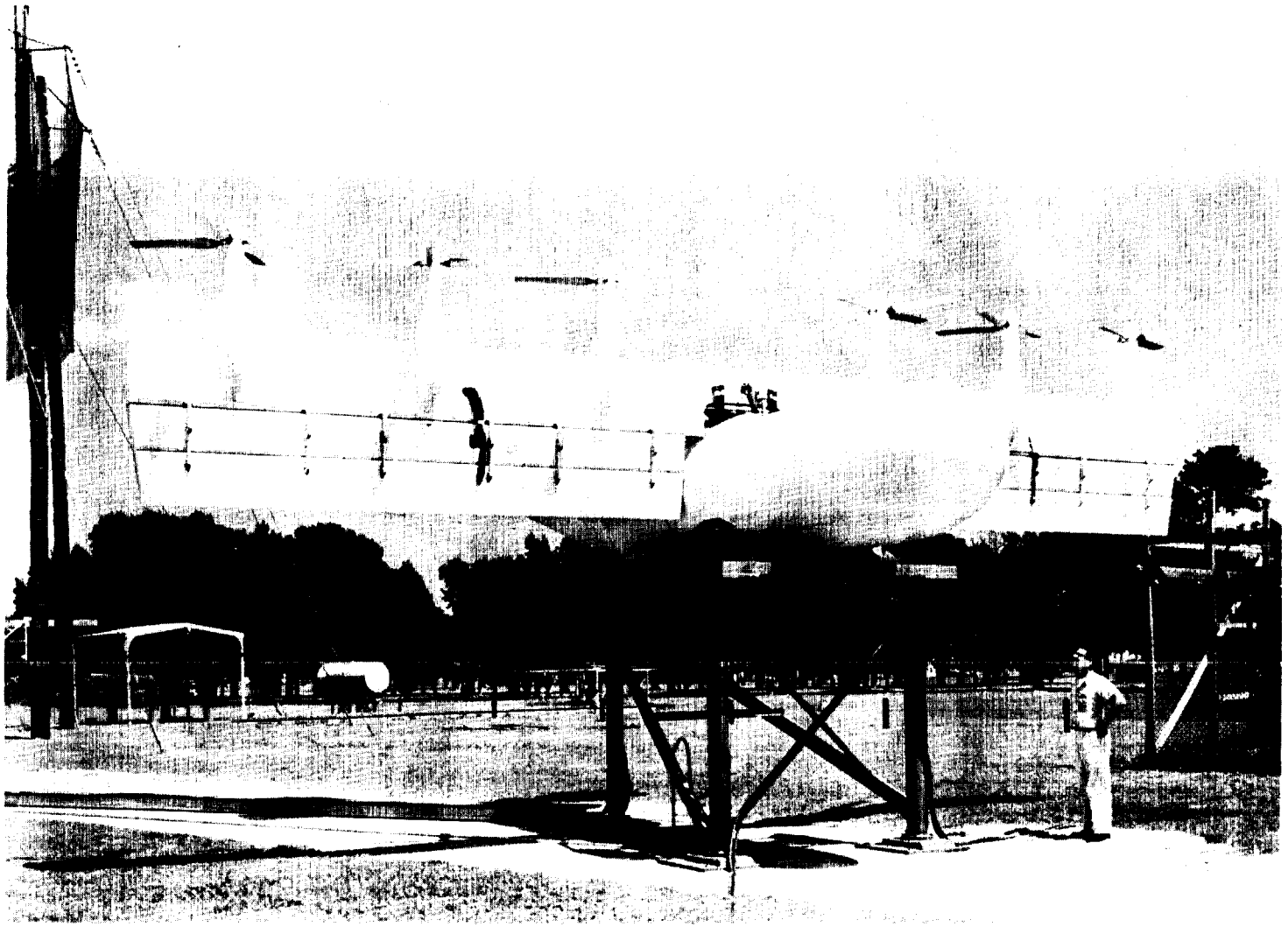


Figure 4.- Model on balance at z/D = 2.425. Wing vertical. L-59-4896

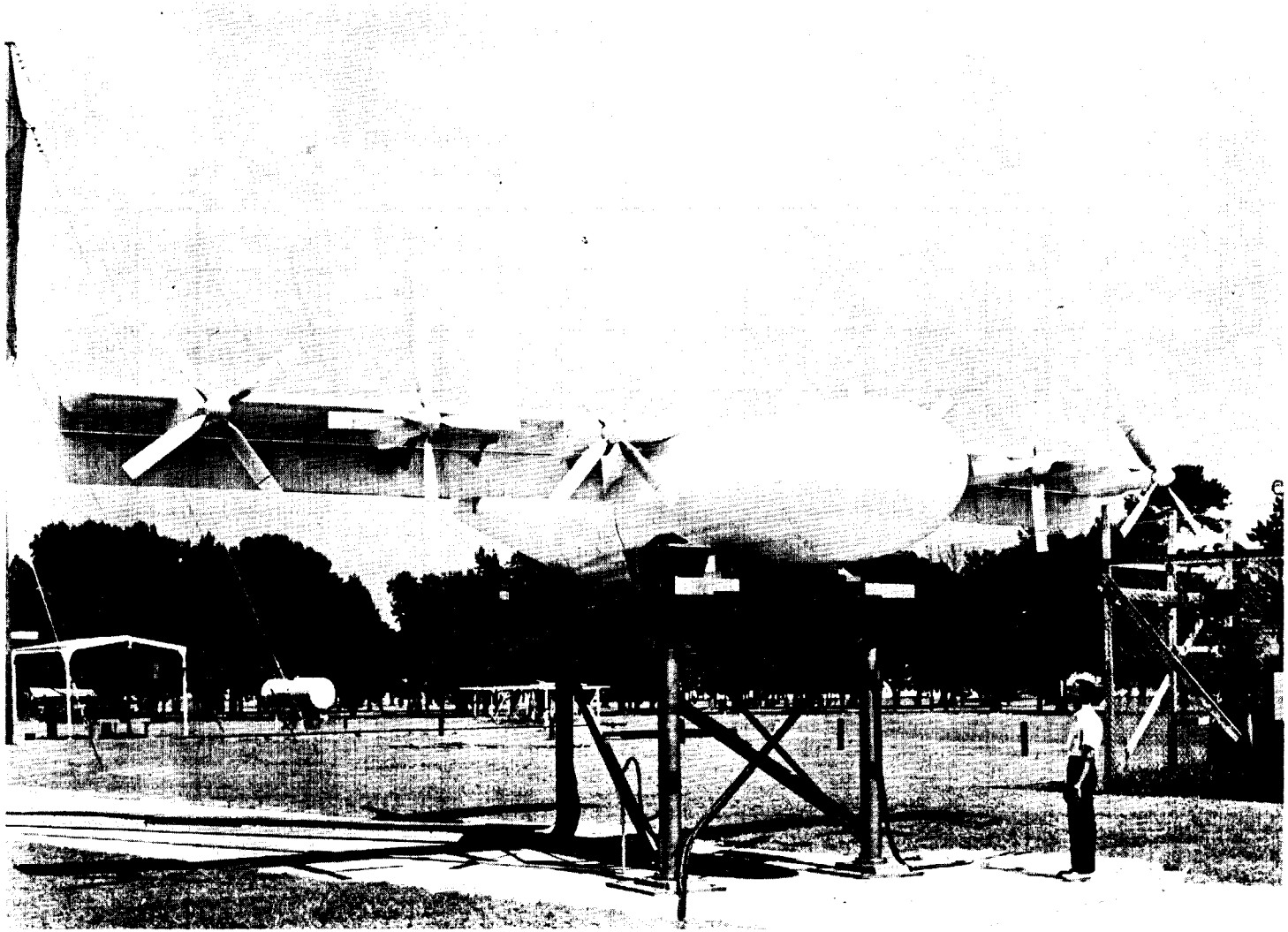


Figure 5.- Model on balance at z/D = 2.425. Wing horizontal. L-59-4897

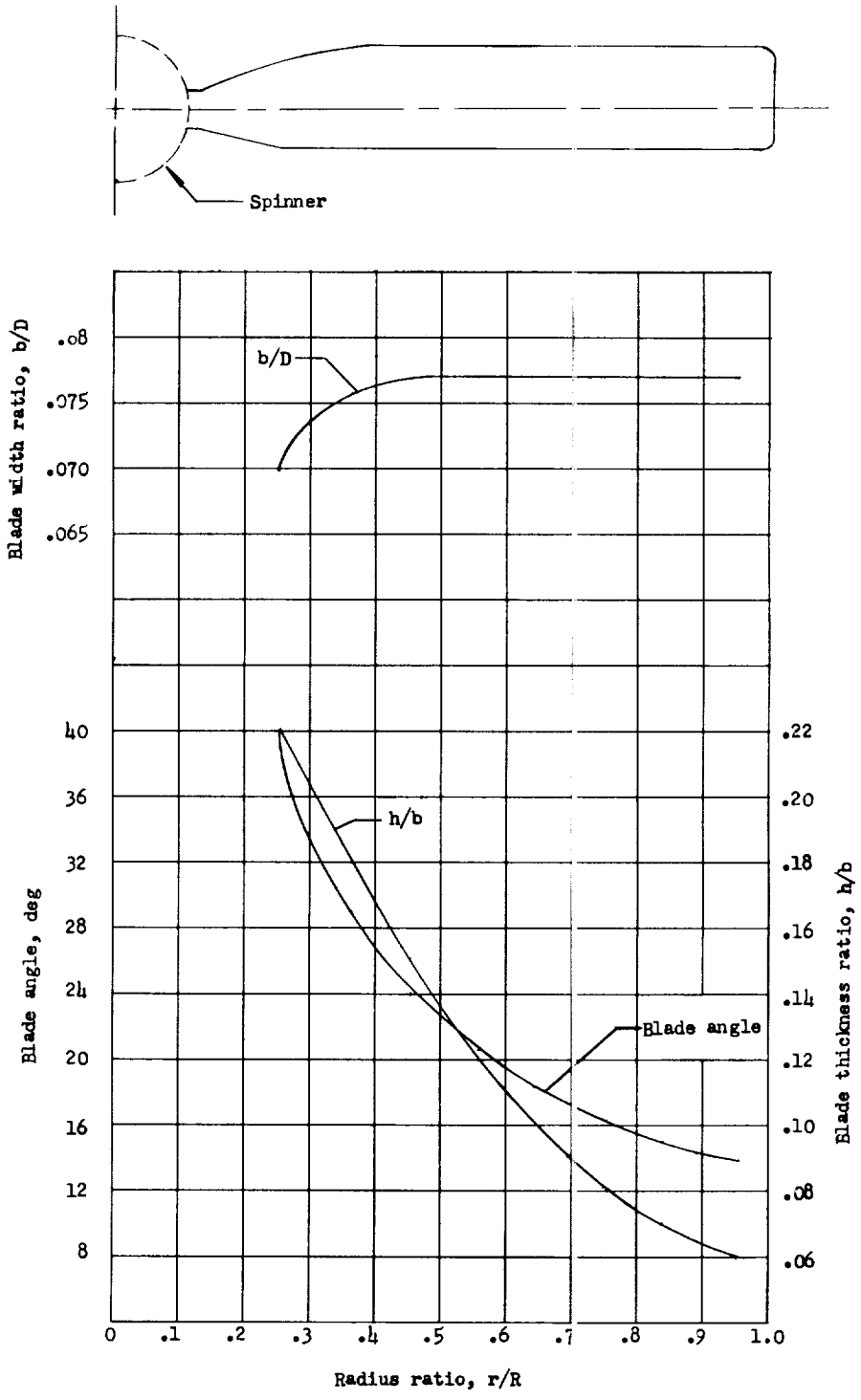


Figure 6.- Propeller blade form curves.

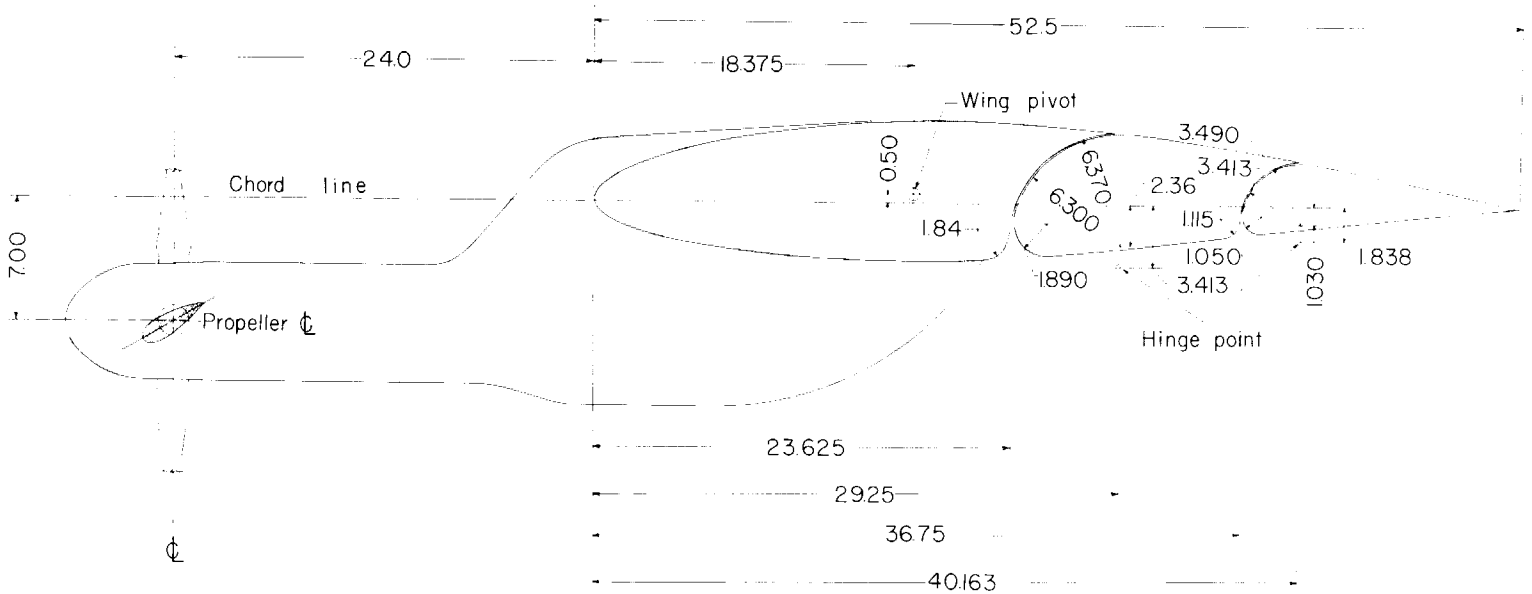


Figure 7.- Geometric characteristics of wing section. All dimensions are in inches.

Figure 8.- Horizontal stabilizer. L-59-7992

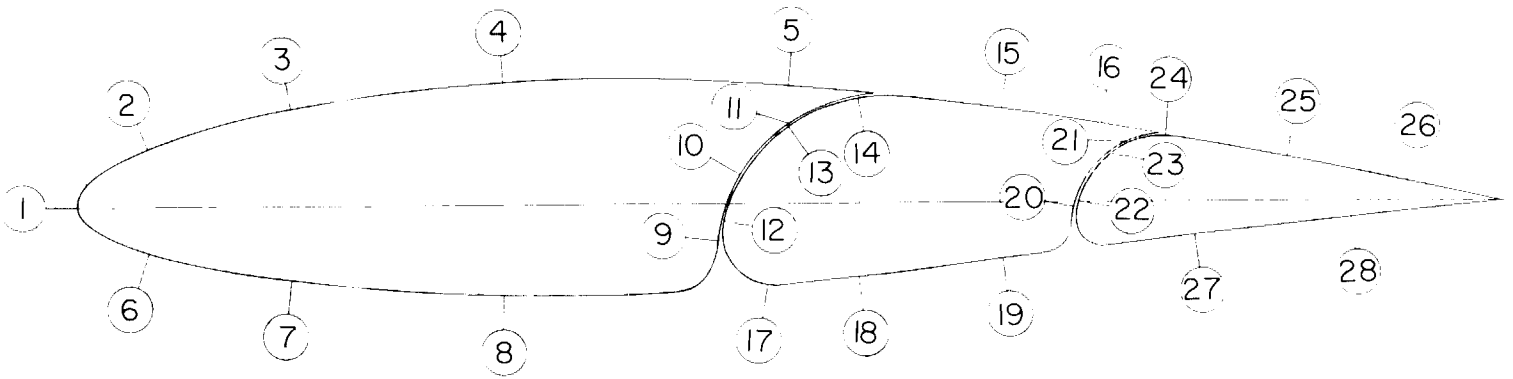
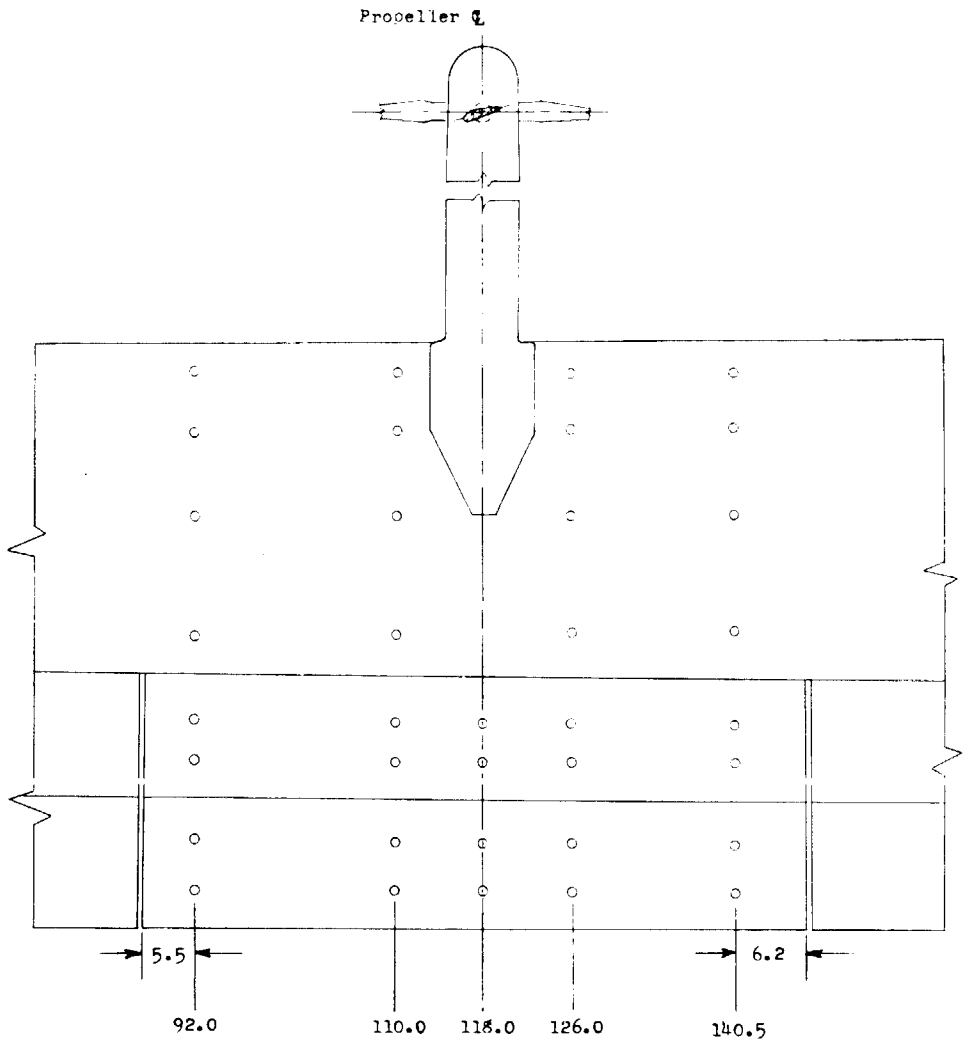


Figure 9.- Orifice locations on wing and flaps.



Orifice Locations

Tube Number	Station, percent chord	Ordinate, percent chord
1	0	0
2	5.0	3.96
3	15.0	6.76
4	30.0	8.53
5	50.0	8.19
6	5.0	-3.18
7	15.0	-5.14
8	30.0	-6.25
9	45.0	-2.59
10	46.6	1.75
11	50.0	5.41
12	45.0	-2.03
13	50.0	5.26
14	55.0	7.33
15	65.0	6.42
16	71.5	5.41
17	48.3	-5.52
18	55.0	-5.05
19	65.0	-3.92
20	69.9	-0.90
21	73.4	[illegible]
22	70.0	-0.95
23	72.6	3.26
24	76.5	4.48
25	84.9	3.01
26	93.3	1.37
27	78.5	-2.19
28	89.5	-1.07

Figure 9.- Concluded.

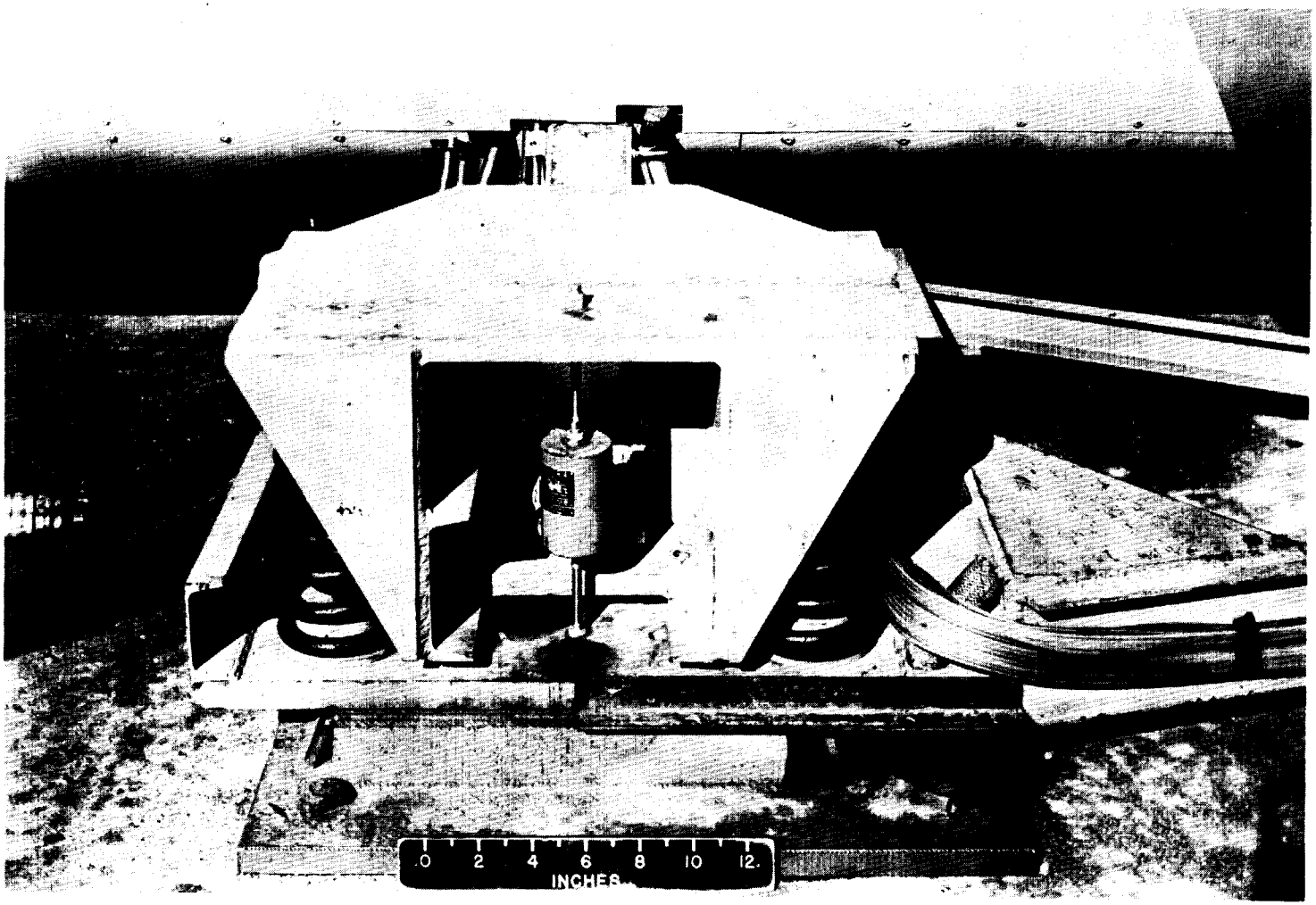


Figure 10.- Left front load cell support assembly. L-59-7994

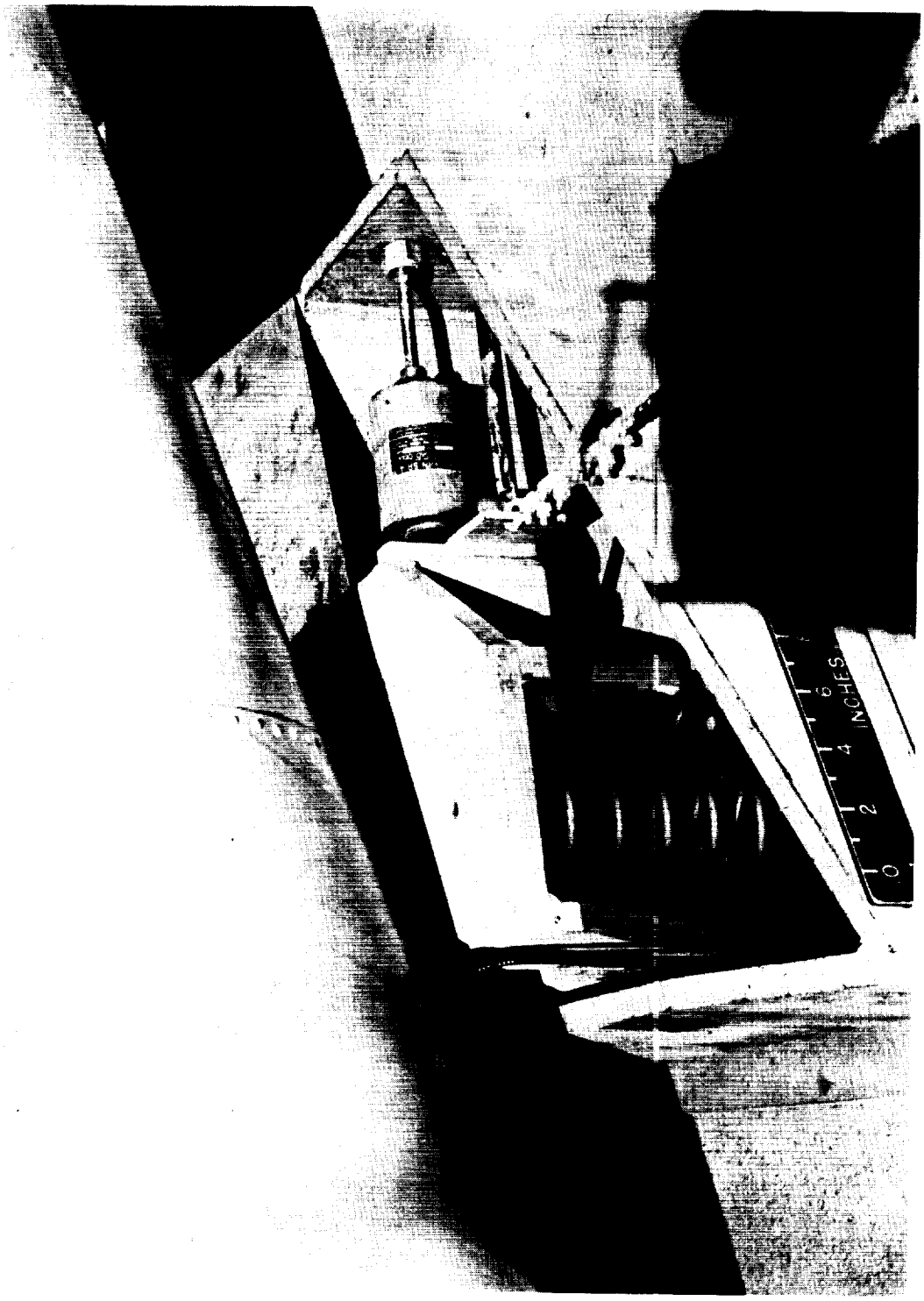


Figure 11.- Rear load cell support assembly. L-59-7995

L-987